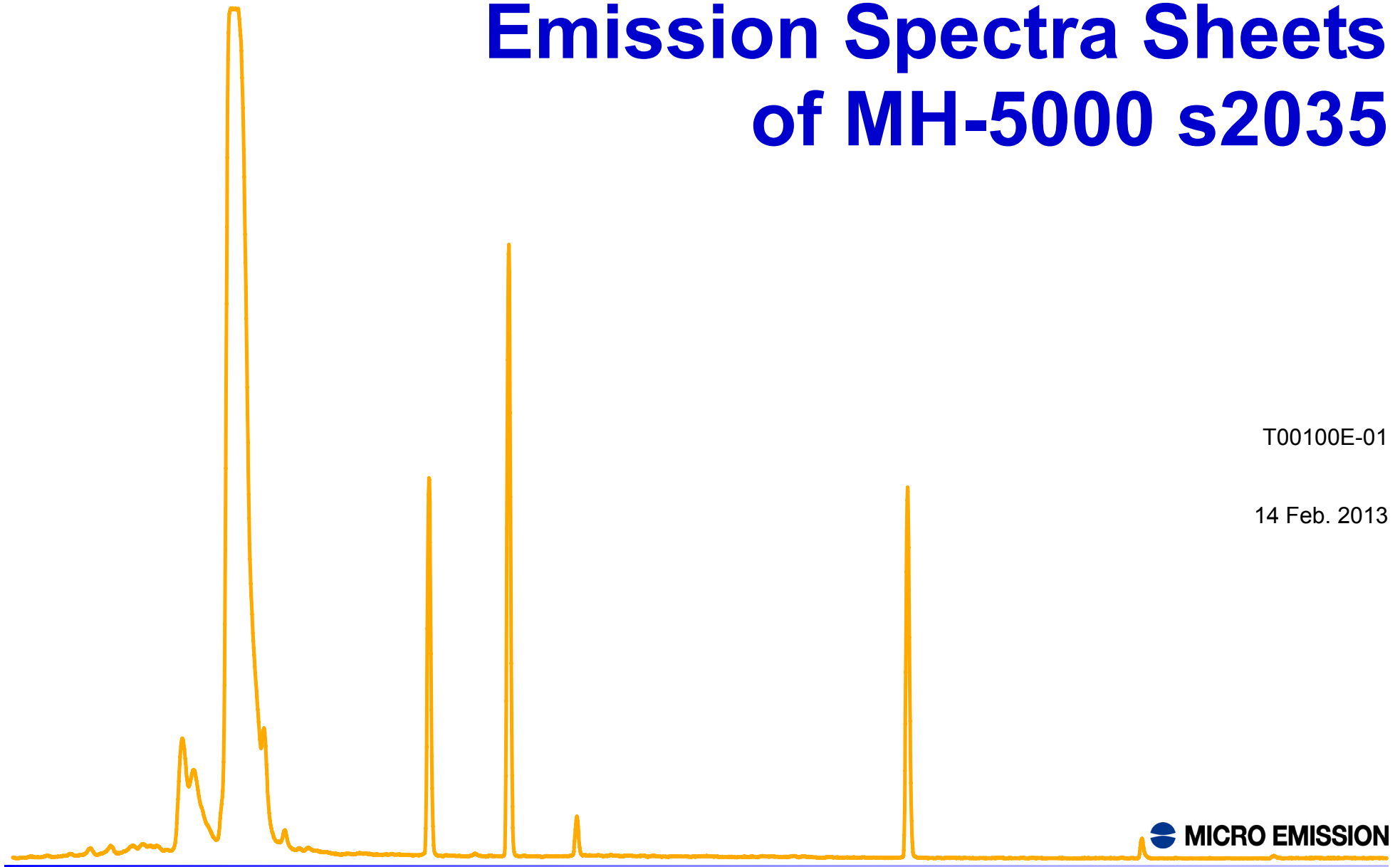
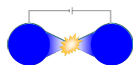


Emission Spectra Sheets of MH-5000 s2035



T00100E-01

14 Feb. 2013



Purpose: These sheets show emission peaks at each element. You can compare peaks of same element and other elements.

Caution: Because spectra depends instrument and quvette, these sheets are only one sample data.

Instrument: MH-5000 series

Solution: Pure solvent or 1000 mg/L single element standatd and diluted solution with same solvent.

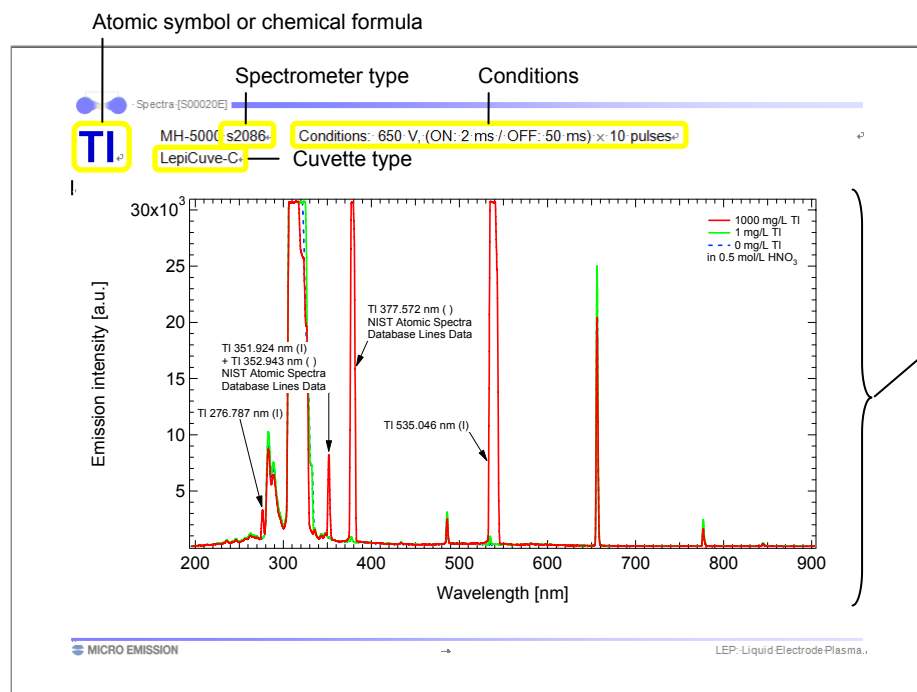
In case of low electrical conductivity or alkaline, acid is added to the solution.

More than 1000 mg/L Na, K, Mg, Ca and I solution are produced by NaCl, KCl, MgCl₂, CaCl₂ and KI.

Caution: High concentration Cr or Fe cause trouble because they produce oxide in narrow channel.

Conditions: Voltage, charged term and iteration count are adjusted. They depend on spectrometer, quvette, solution and peak height.

Note:



Ref.

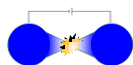
Atomic emission (Atomic line and Ionic line) :
Phelps, F. M., III. M.I.T. Wavelength Tables Vol. 2: Wavelengths by Element; The MIT Press: Cambridge, MA, 1982

Molecule spectra:
Pearse, R.W.B. and Gaydon, A.G., THE IDENTIFICATION OF MOLECULAR SPECTRA, Chapman and Hall, London, 1976

Vertical axis: Emission intensity [a.u.]
Horizontal axis: Wavelength [nm]

Example 1: Simple line
TI 535.046 nm (I)
Emission type
(I) Atomic line
(II) Ionic line
() Unknown
No note at molecular peak
Wavelength
Element name or molecular name

Example 2: Multiple lines
TI 351.924 nm (I) + TI 352.943 nm ()



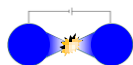
Emission Spectra Sheets of MH-5000 s2035

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	H																	He
2	Li	Be											B	C	N	O	F	Ne
3	Na	Mg											Al	Si	P	S	Cl	Ar
4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	Cs	Ba	*	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	Fr	Ra	**															

Explanatory notes

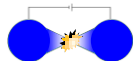
Be	Detected
Na	Detected, small peak
Li	Not detected
H	Unmeasured

*	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
**	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr



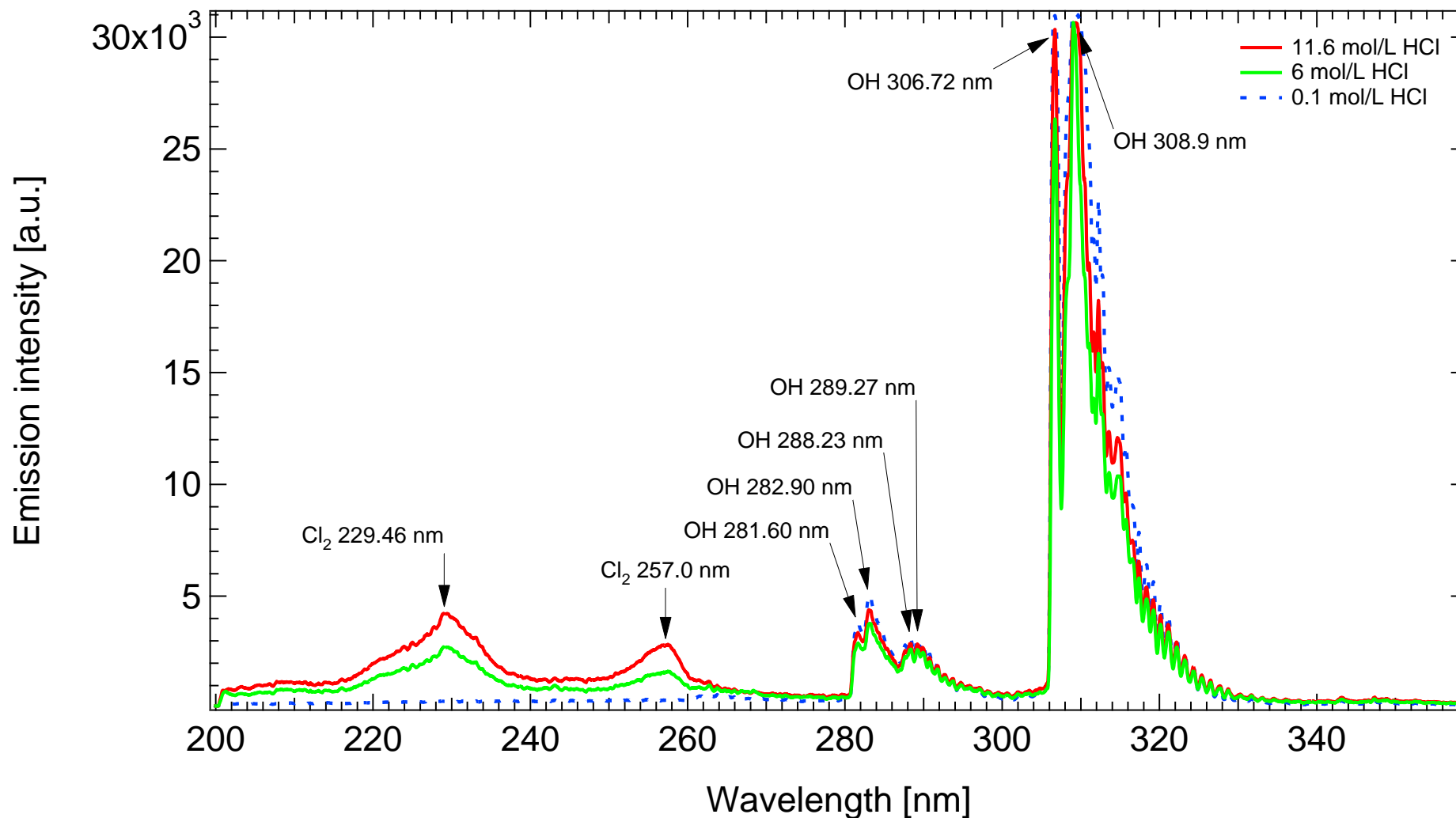
Name	Note	Revised
HCl	Solvent	14 Feb. 2013
HNO ₃	Solvent	14 Feb. 2013
H ₂ SO ₄	Solvent	14 Feb. 2013
Ag		14 Feb. 2013
Al	Not detected.	14 Feb. 2013
As		14 Feb. 2013
Au		14 Feb. 2013
B		14 Feb. 2013
Ba	Not detected.	14 Feb. 2013
Be		14 Feb. 2013
Bi		14 Feb. 2013
Ca - 1	Low concentration. Not detected.	14 Feb. 2013
Ca - 2	High concentration. Detected unknown peaks.	14 Feb. 2013
Cd		14 Feb. 2013
Co		14 Feb. 2013
Cr	Be careful about generation of oxide.	14 Feb. 2013
Cs	Not detected.	14 Feb. 2013
Cu		14 Feb. 2013
Eu	Not detected.	14 Feb. 2013
Fe	Be careful about generation of oxide.	14 Feb. 2013
Ga		14 Feb. 2013
Ge		14 Feb. 2013
Hg		14 Feb. 2013
I	Detected, in case of more than 1000 mg/L.	14 Feb. 2013
In		14 Feb. 2013
Ir		14 Feb. 2013
K - 1	Low concentration. Detected, in case of more than 1000 mg/L.	14 Feb. 2013
K - 2	High concentration. Detected, in case of more than 1000 mg/L.	14 Feb. 2013

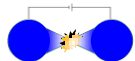
Name	Note	Revised
La	Not detected.	14 Feb. 2013
Li	Not detected.	14 Feb. 2013
Mg - 1	Low concentration	14 Feb. 2013
Mg - 2	High concentration	14 Feb. 2013
Mn		14 Feb. 2013
Mo	Not detected.	14 Feb. 2013
Na - 1	Low concentration	14 Feb. 2013
Na - 2	High concentration	14 Feb. 2013
Ni		14 Feb. 2013
P		14 Feb. 2013
Pb		14 Feb. 2013
Pd		14 Feb. 2013
Pt		14 Feb. 2013
Rb	Not detected.	14 Feb. 2013
Rh		14 Feb. 2013
Ru		14 Feb. 2013
Sb		14 Feb. 2013
Sc	Not detected.	14 Feb. 2013
Se		14 Feb. 2013
Sn		14 Feb. 2013
Sr	Detected, small peak	14 Feb. 2013
Tb	Not detected.	14 Feb. 2013
Te		14 Feb. 2013
Tl		14 Feb. 2013
Y	Not detected.	14 Feb. 2013
Yb	Not detected.	14 Feb. 2013
Zn		14 Feb. 2013



HCl

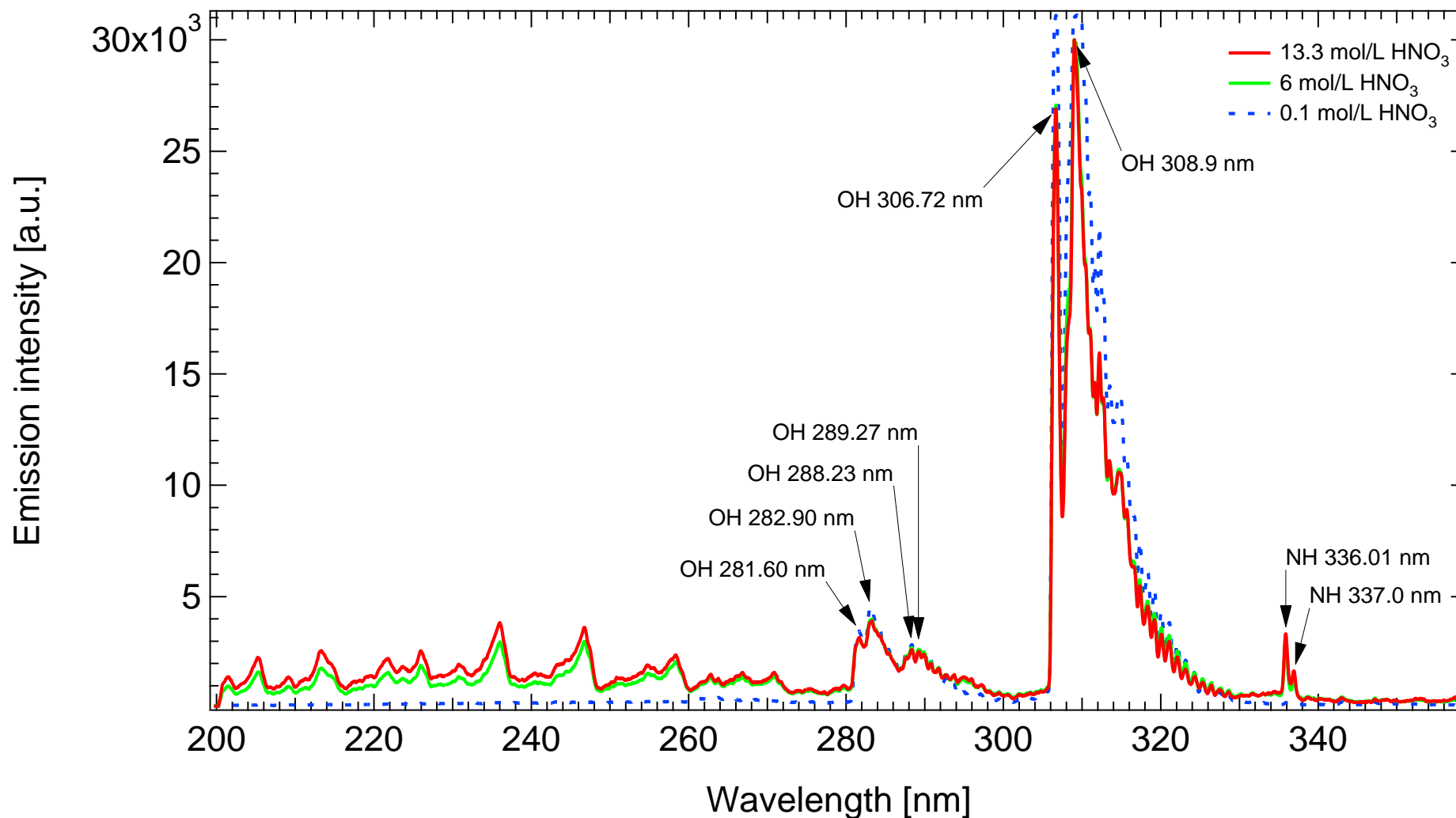
MH-5000 s2035 Conditions: 650 V, (ON: 1 ms / OFF: 80 ms) × 40 pulses ... 11.6 mol/L
LepiCuve-C 650 V, (ON: 2 ms / OFF: 140 ms) × 30 pulses ... 6 mol/L
800 V, (ON: 2 ms / OFF: 50 ms) × 40 pulses ... 0.1 mol/L

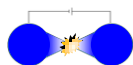




HNO₃

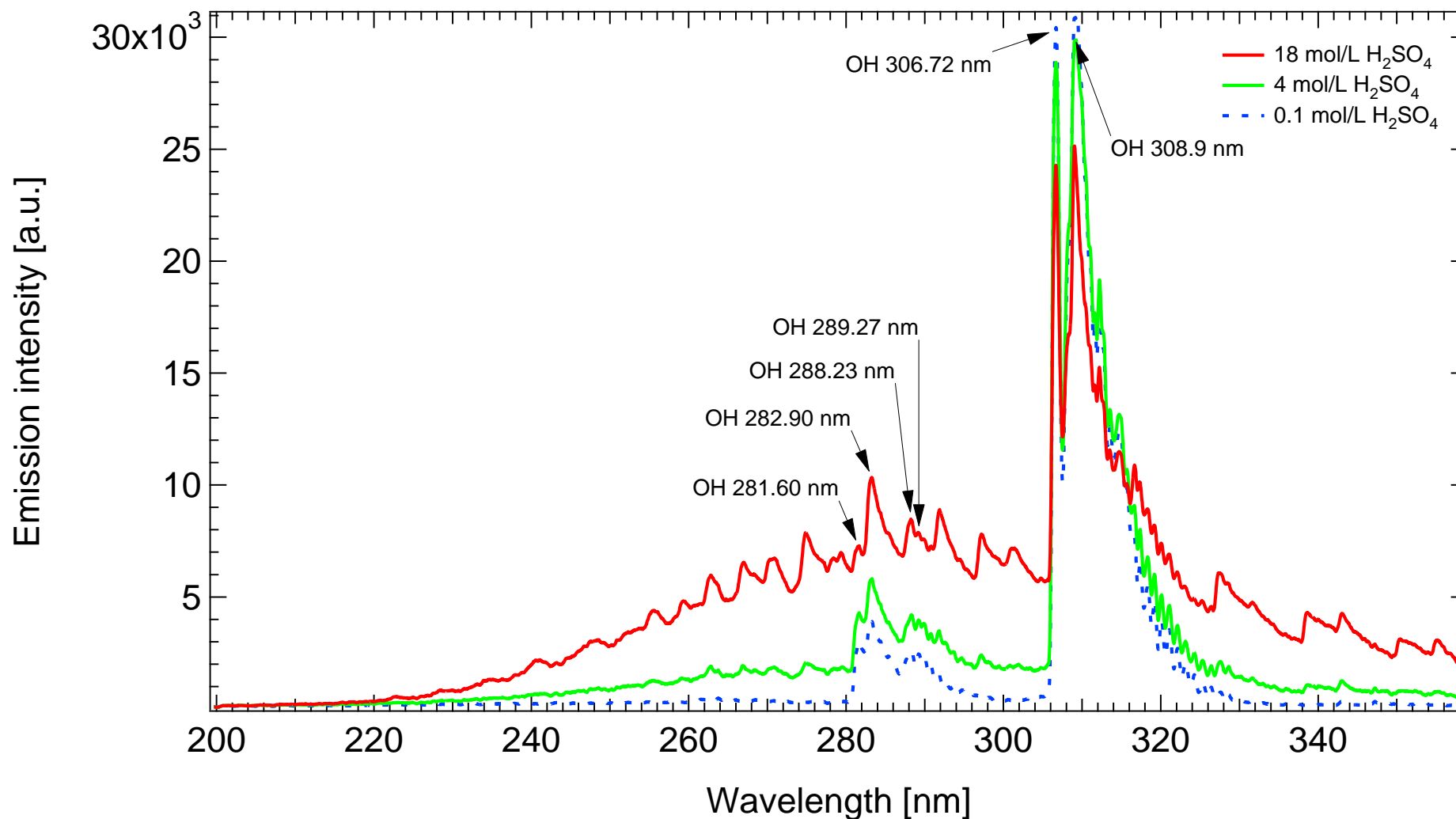
MH-5000 s2035 Conditions: 750 V, (ON: 2 ms / OFF: 100 ms) × 40 pulses ... 13.3 mol/L
LepiCuve-C 700 V, (ON: 2 ms / OFF: 120 ms) × 60 pulses ... 6 mol/L
850 V, (ON: 2 ms / OFF: 50 ms) × 40 pulses ... 0.1 mol/L

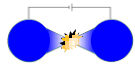




H₂SO₄

MH-5000 s2035 Conditions: 750 V, (ON: 1 ms / OFF: 120 ms) × 60 pulses ... 18 mol/L
LepiCuve-C 750 V, (ON: 2 ms / OFF: 140 ms) × 40 pulses ... 4 mol/L
850 V, (ON: 2 ms / OFF: 60 ms) × 60 pulses ... 0.1 mol/L

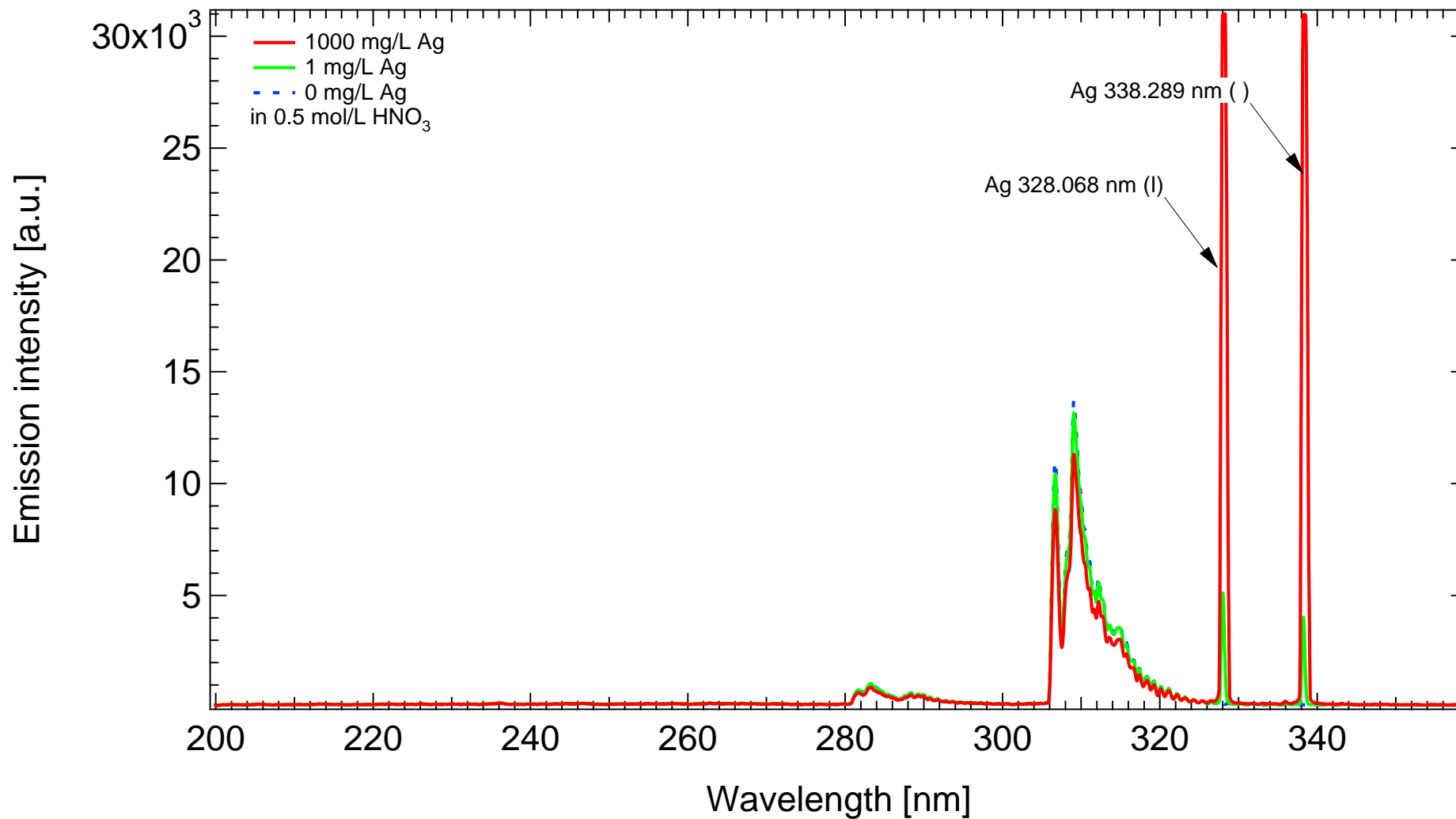


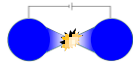


Ag

MH-5000 s2035
LepiCuve-C

Conditions: 700 V, (ON: 2 ms / OFF: 50 ms) × 10 pulses



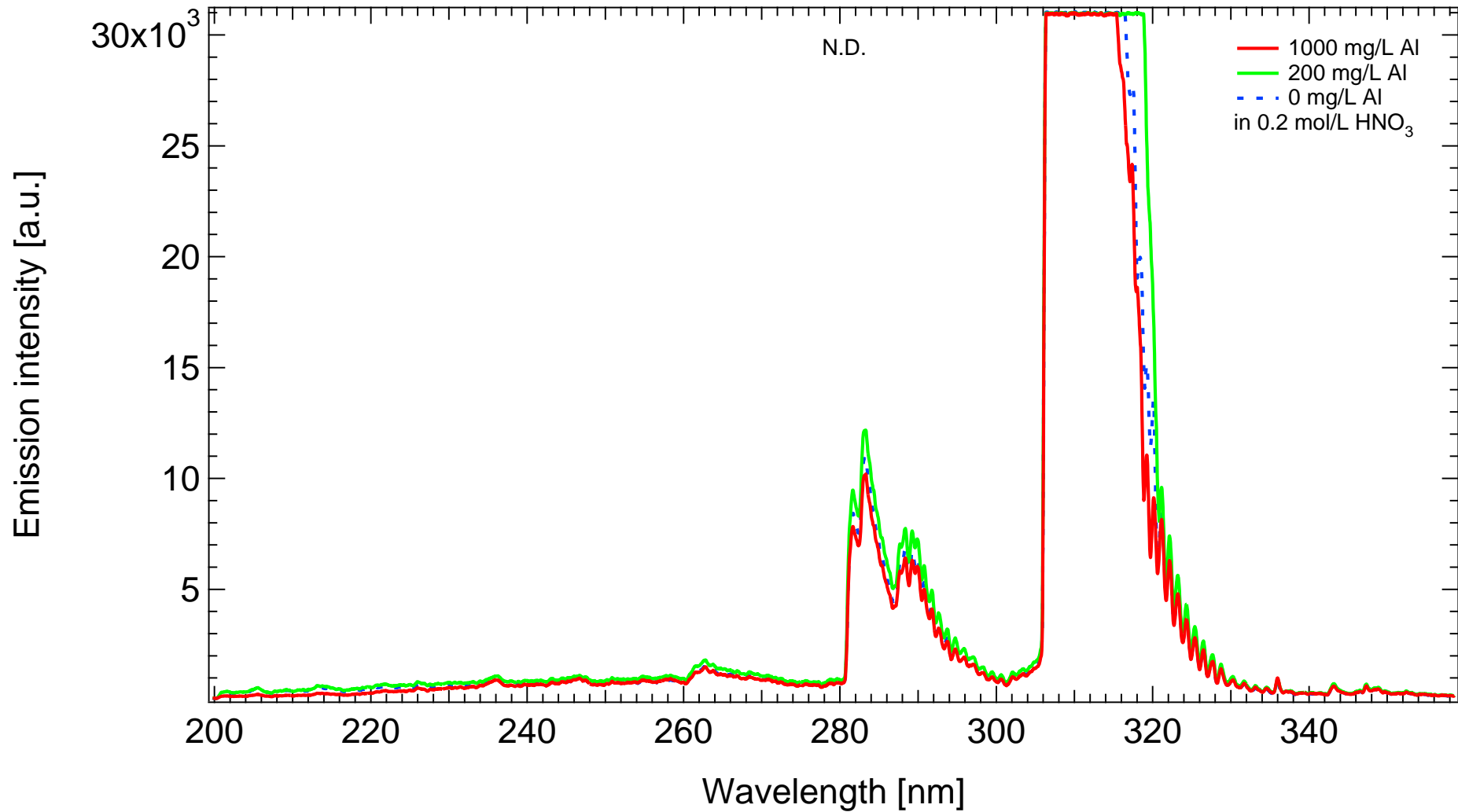


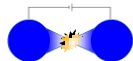
Spectra [T00100E]

Al

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 30 pulses

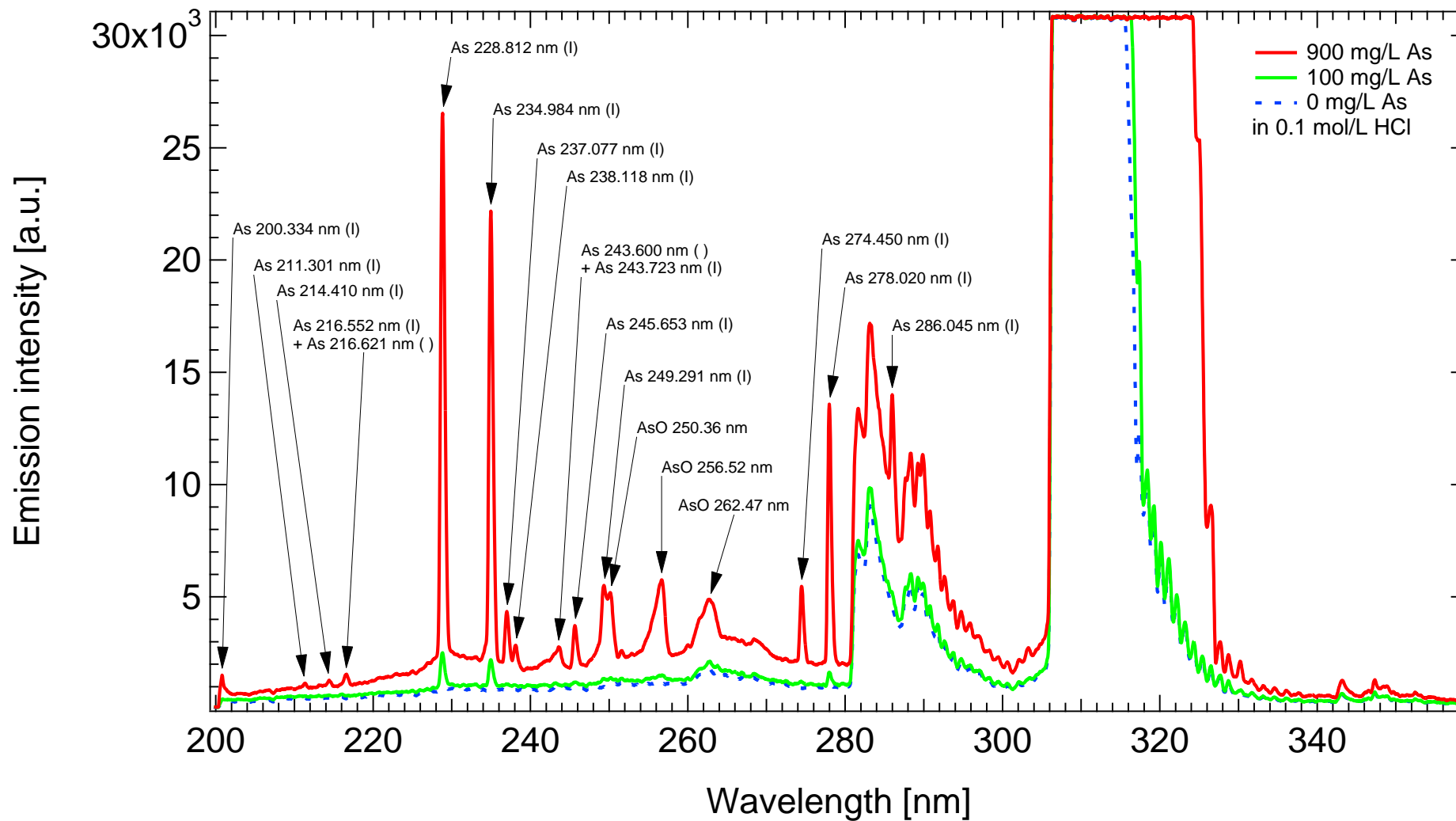


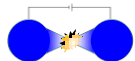


As

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses



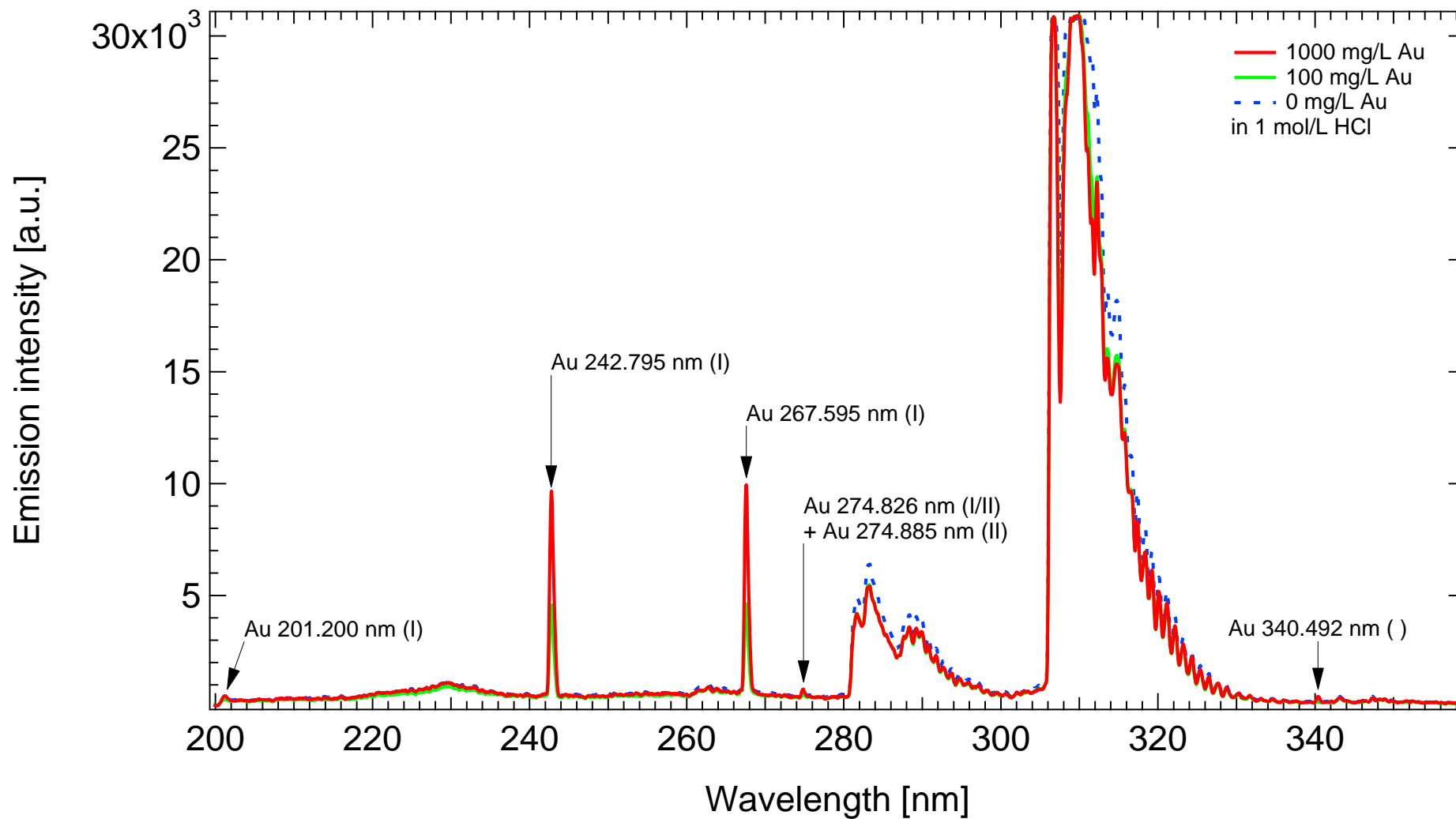


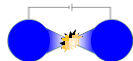
Au

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 40 pulses

LepiCuve-C



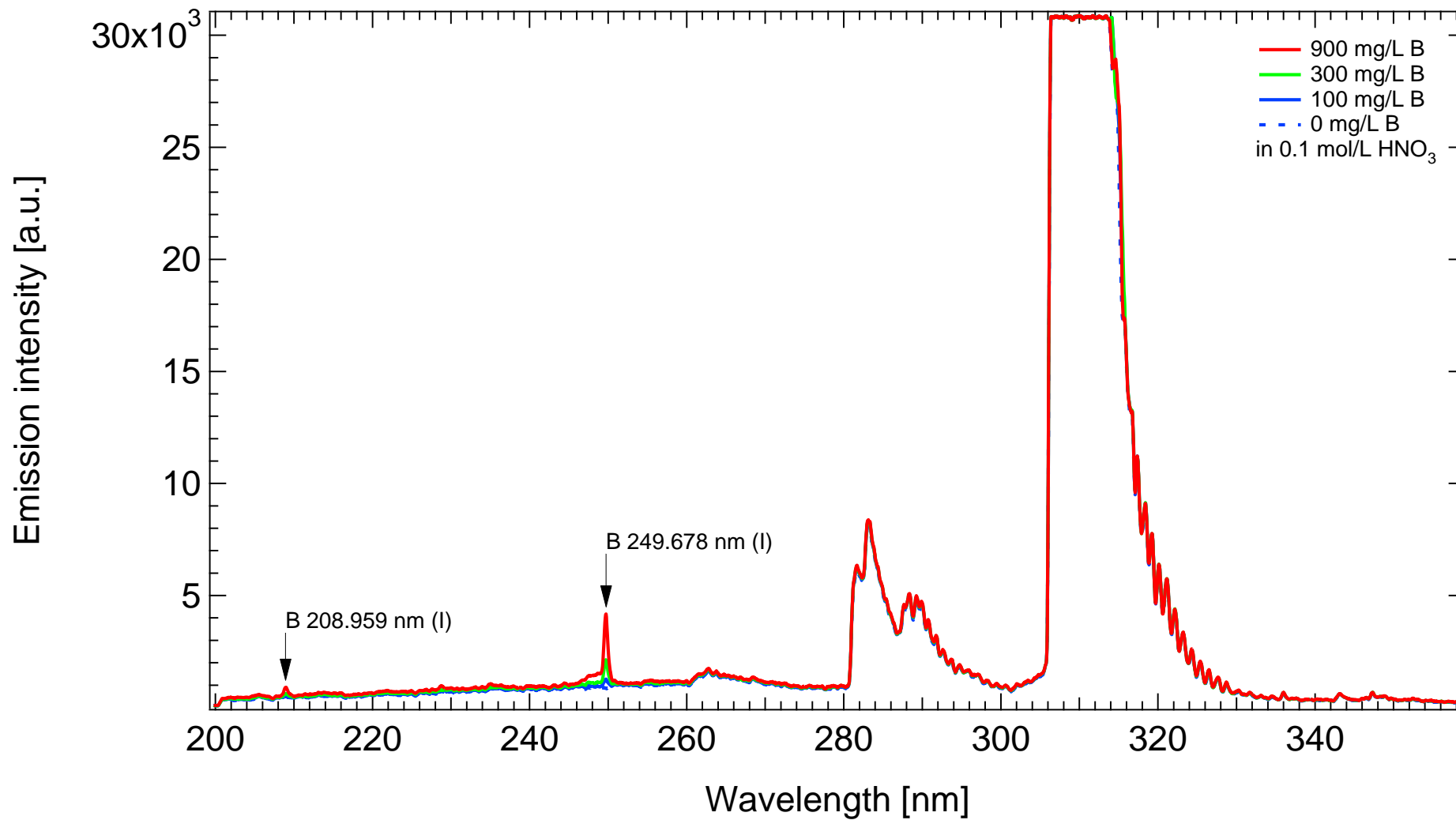


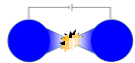
B

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C



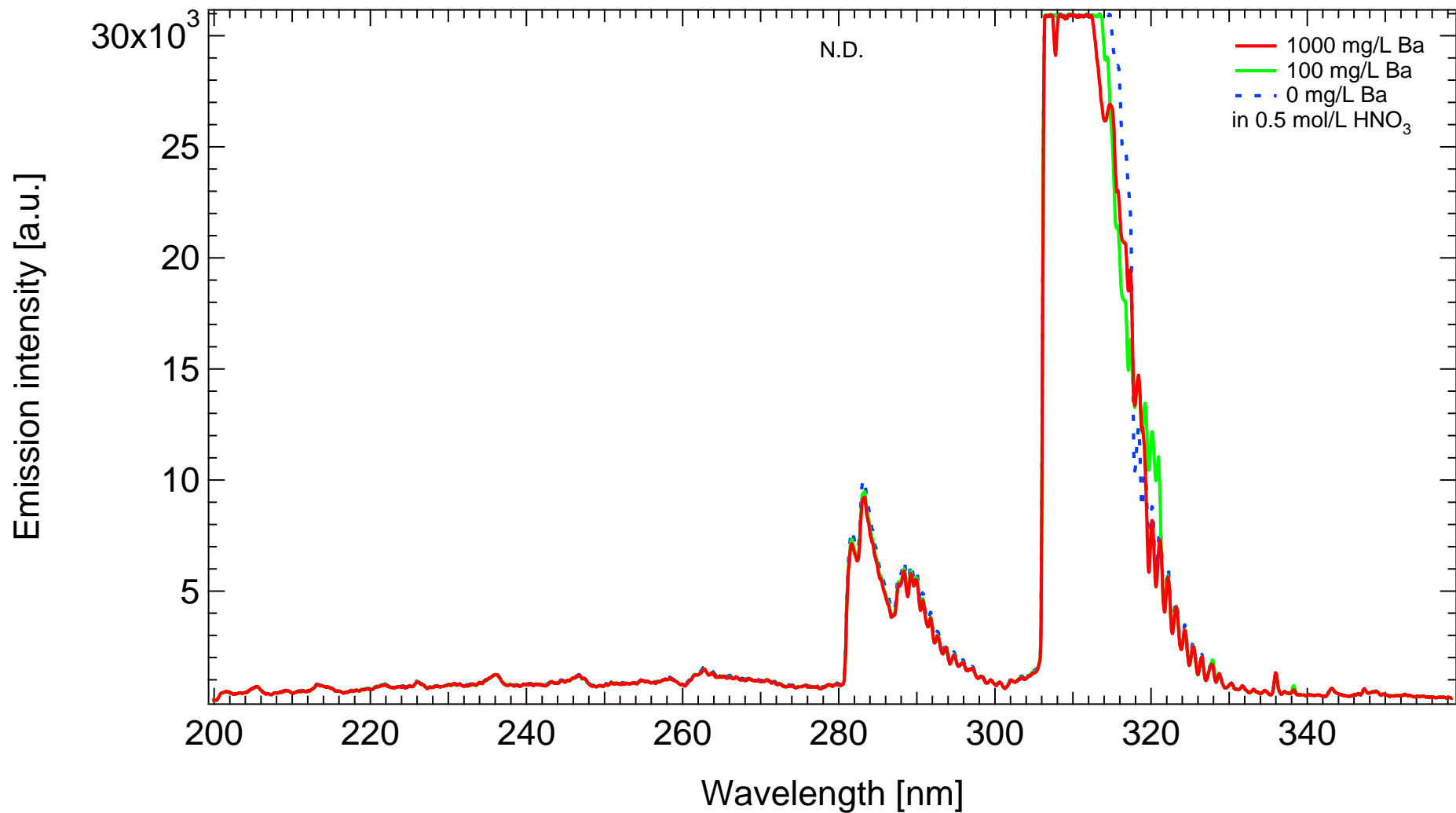


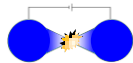
Ba

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 50 ms) × 40 pulses

LepiCuve-C



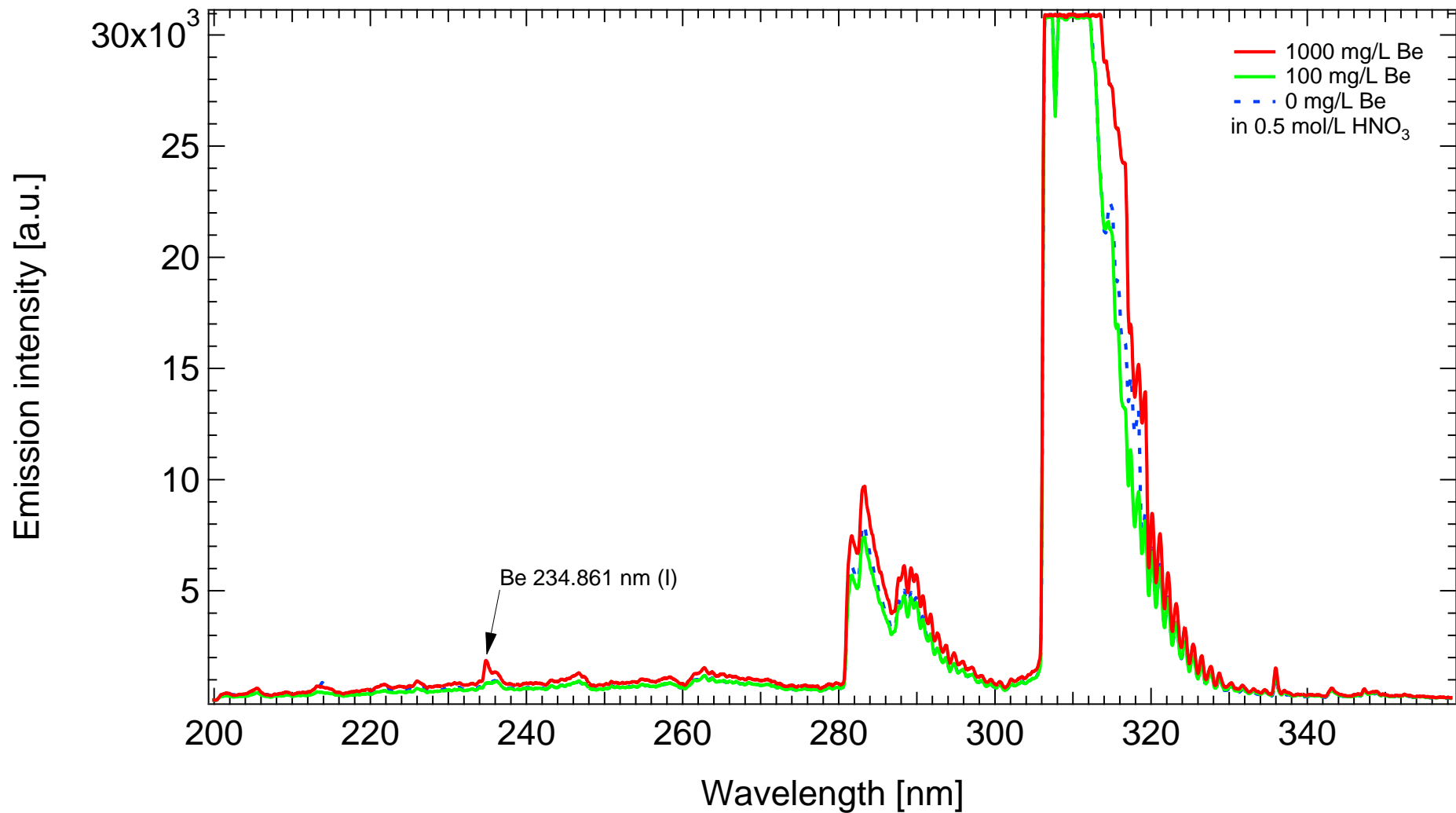


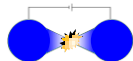
Be

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 50 ms) × 30 pulses

LepiCuve-C



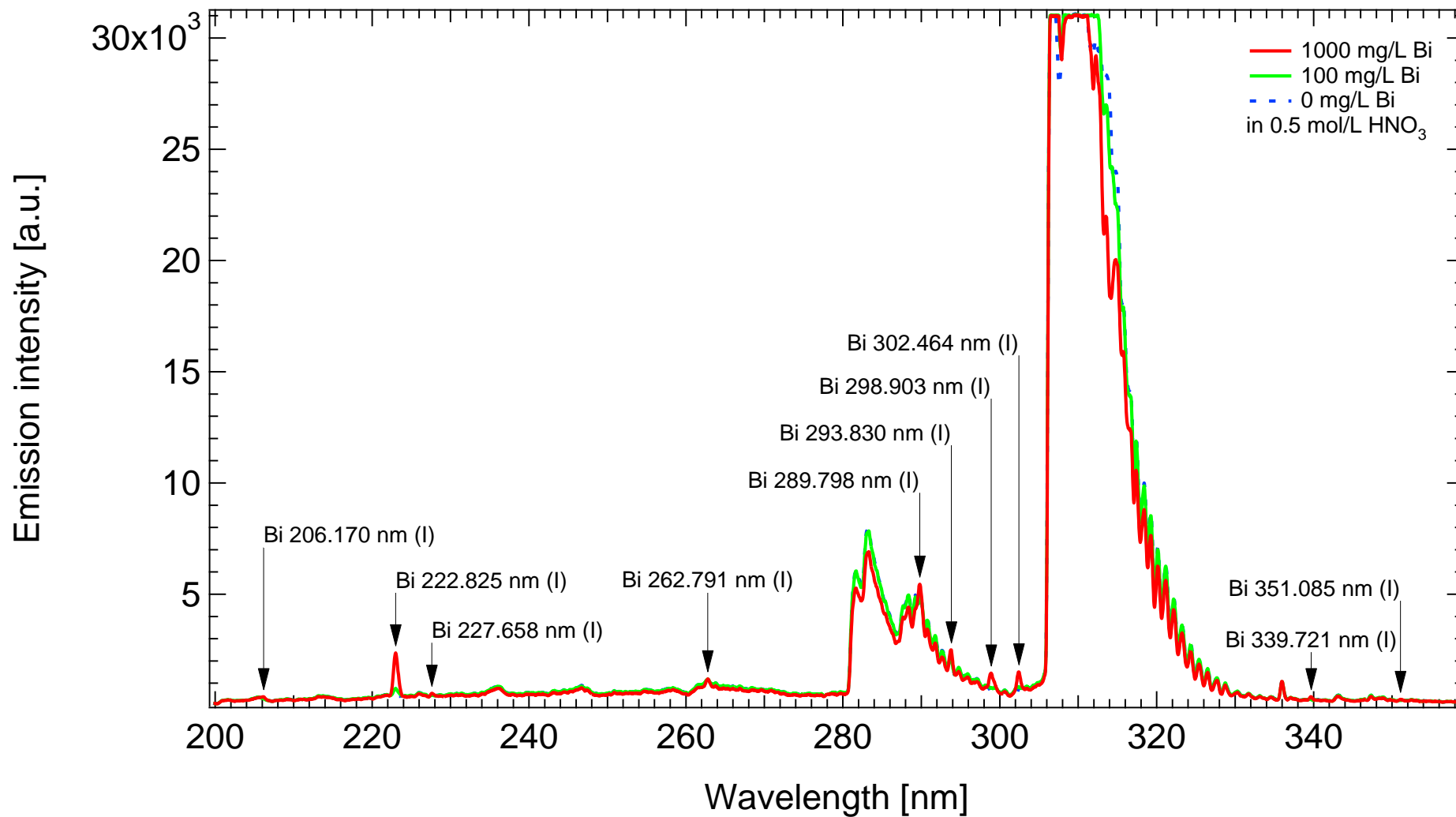


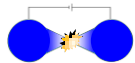
Bi

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 50 ms) × 30 pulses

LepiCuvе-C



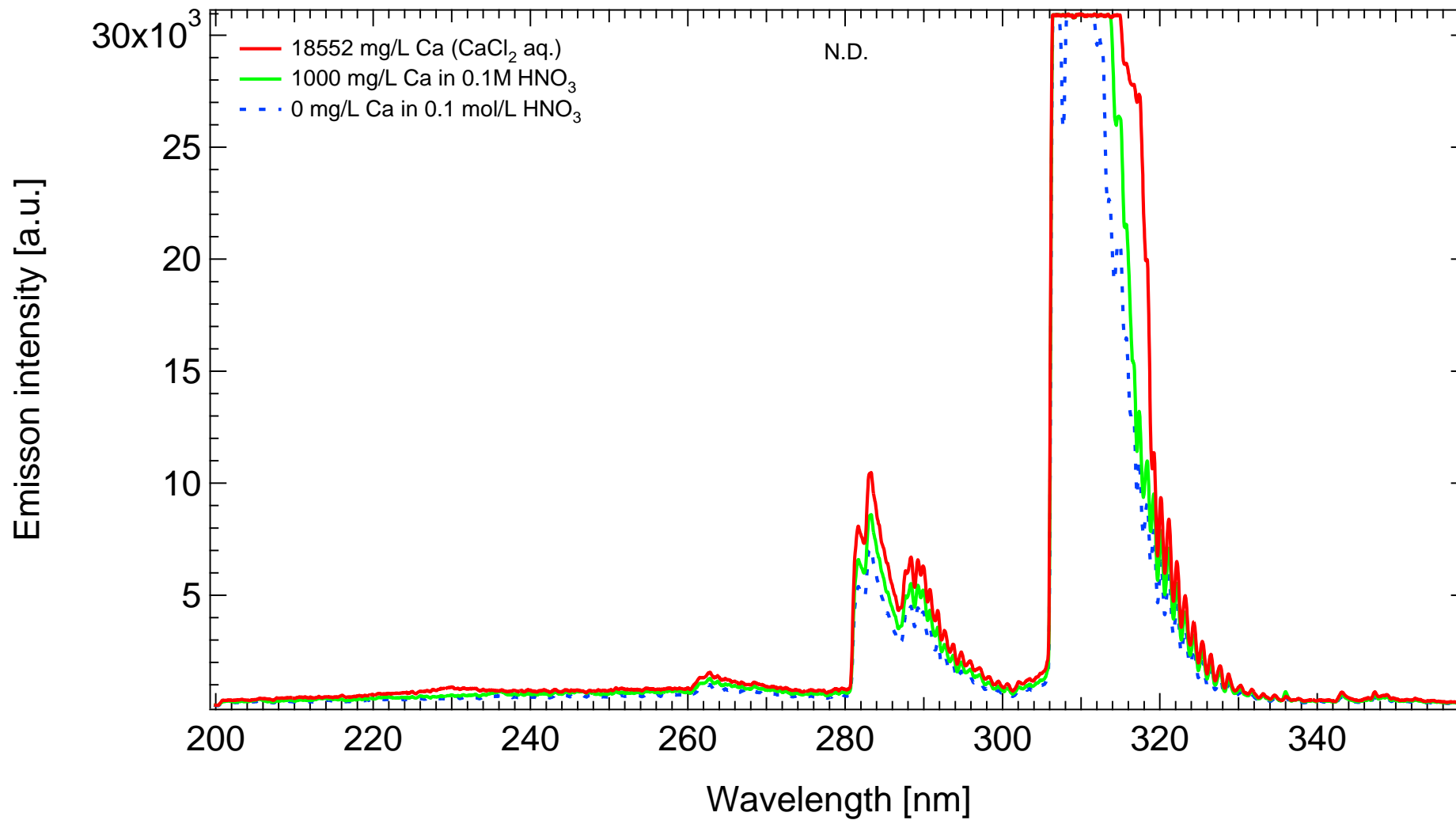


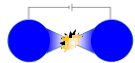
Ca

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C



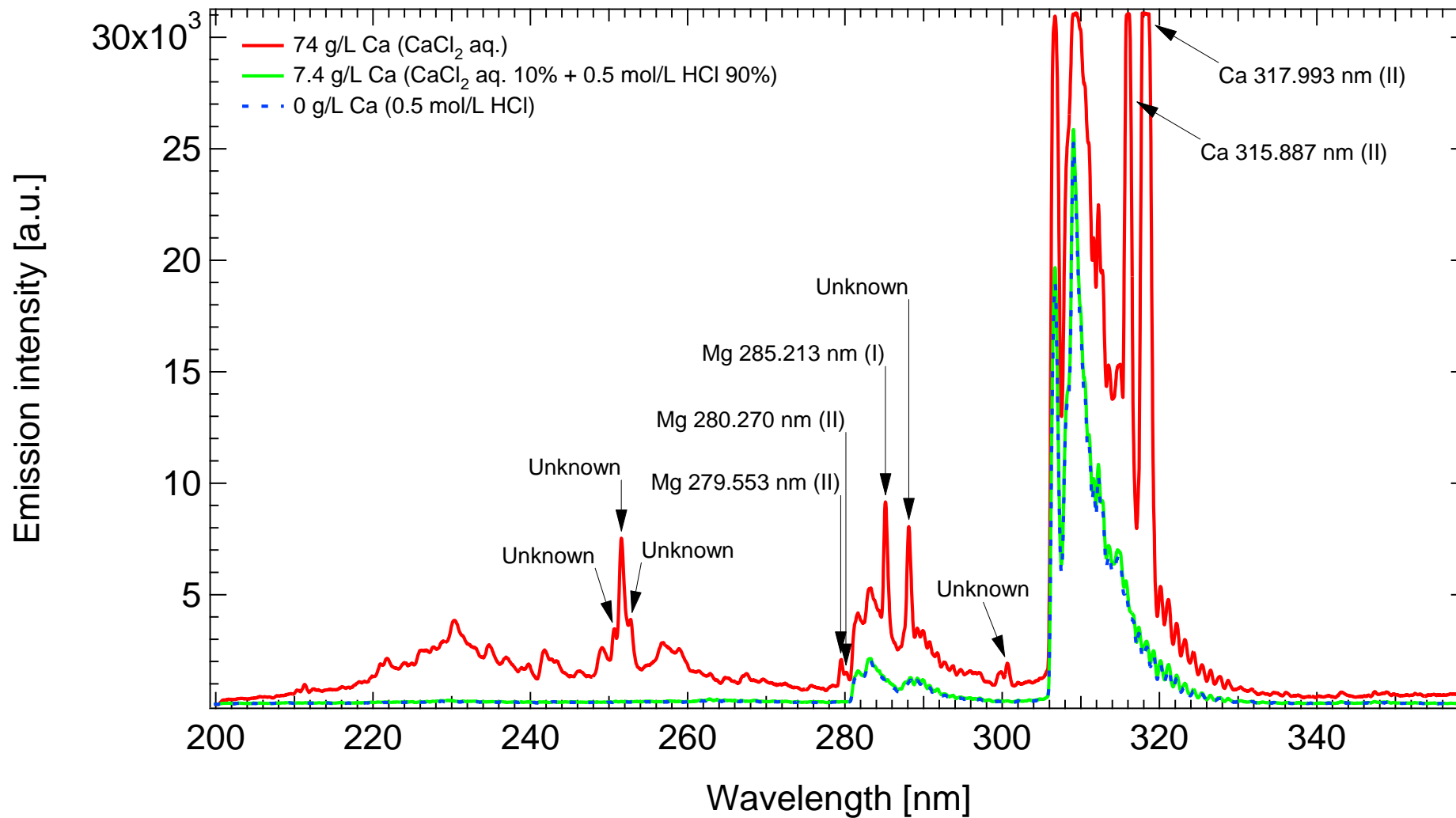


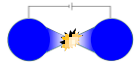
Ca

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 50 ms) × 40 pulses

LepiCuve-C

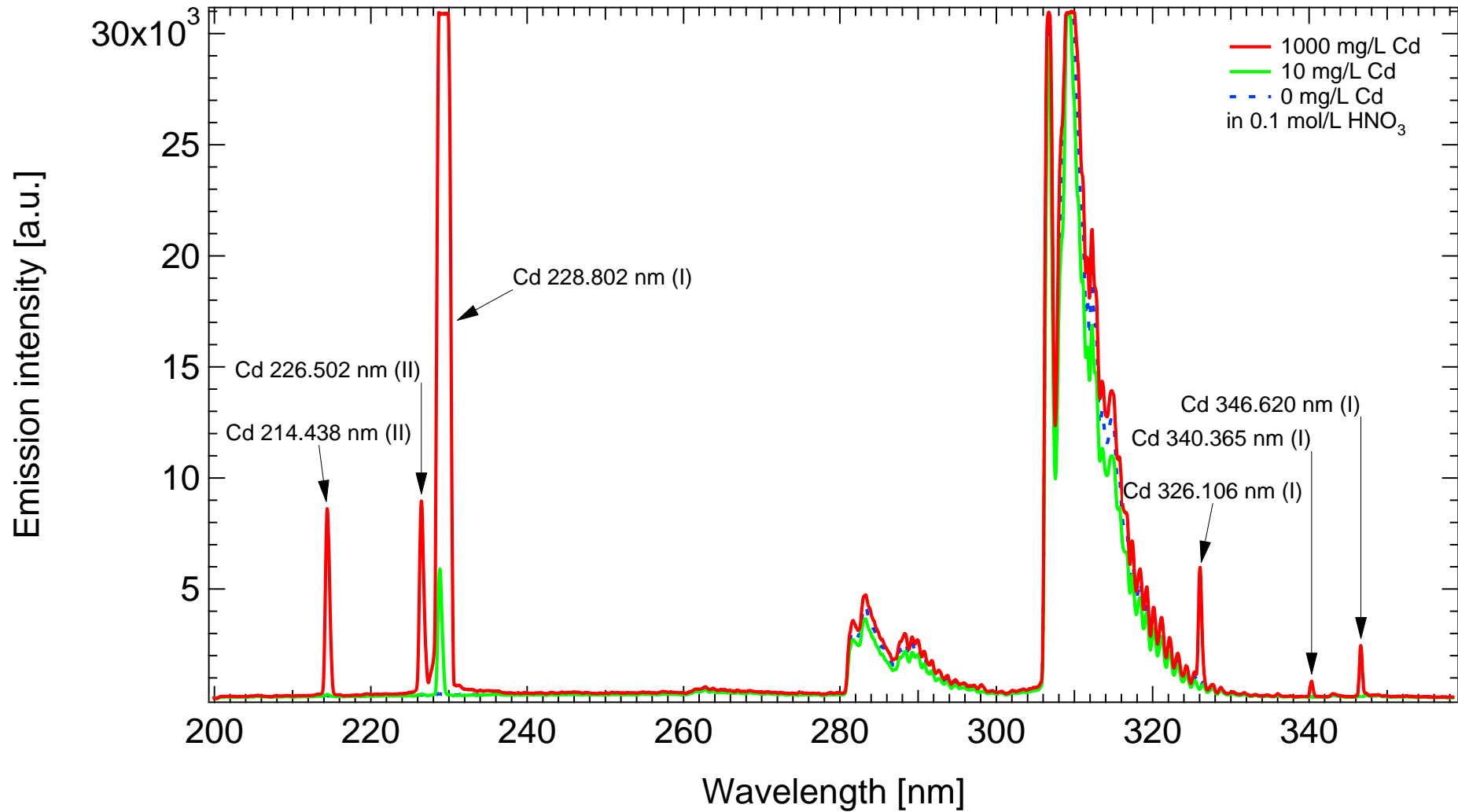


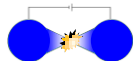


Cd

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 20 pulses



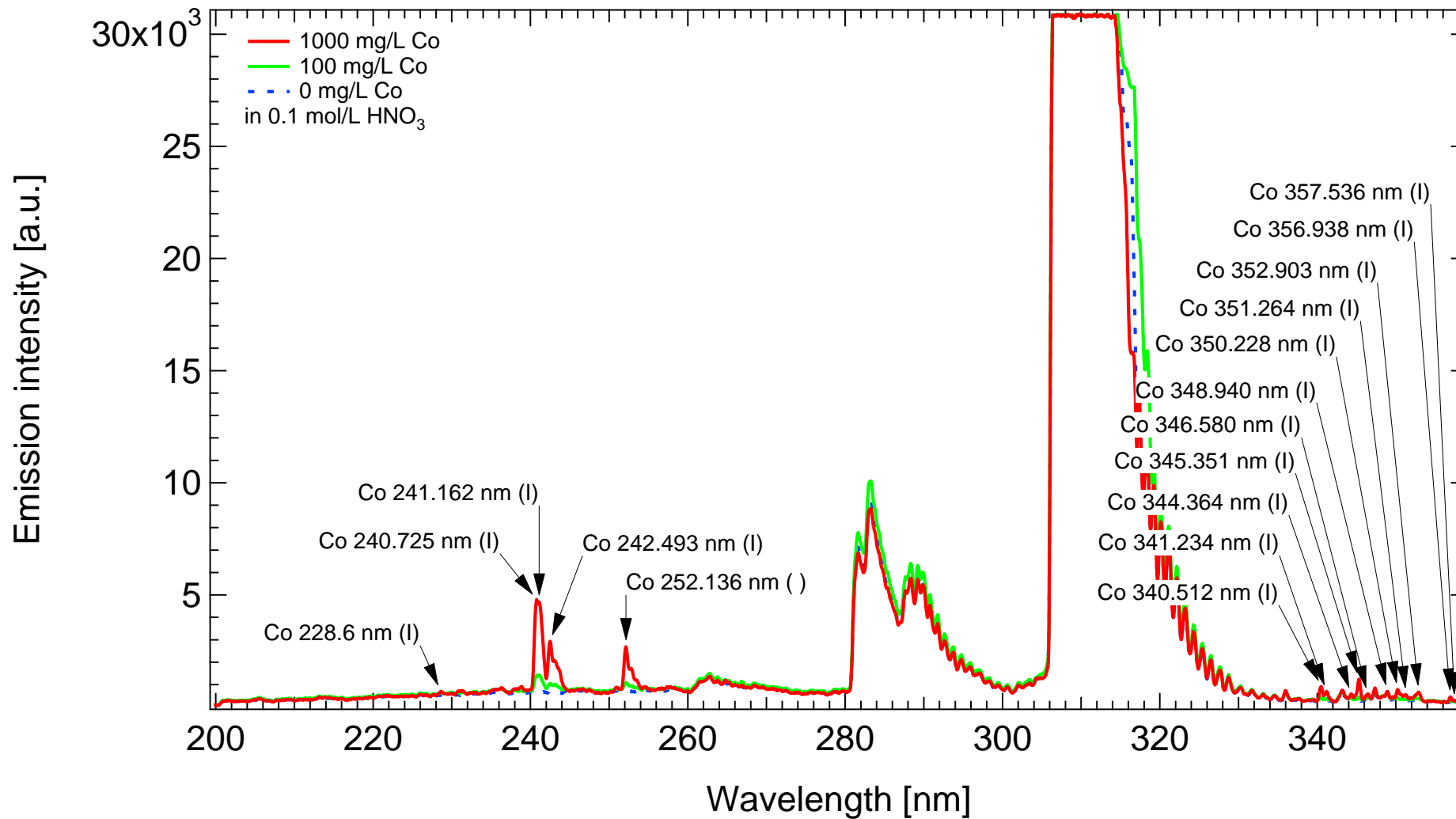


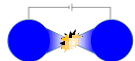
Co

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C

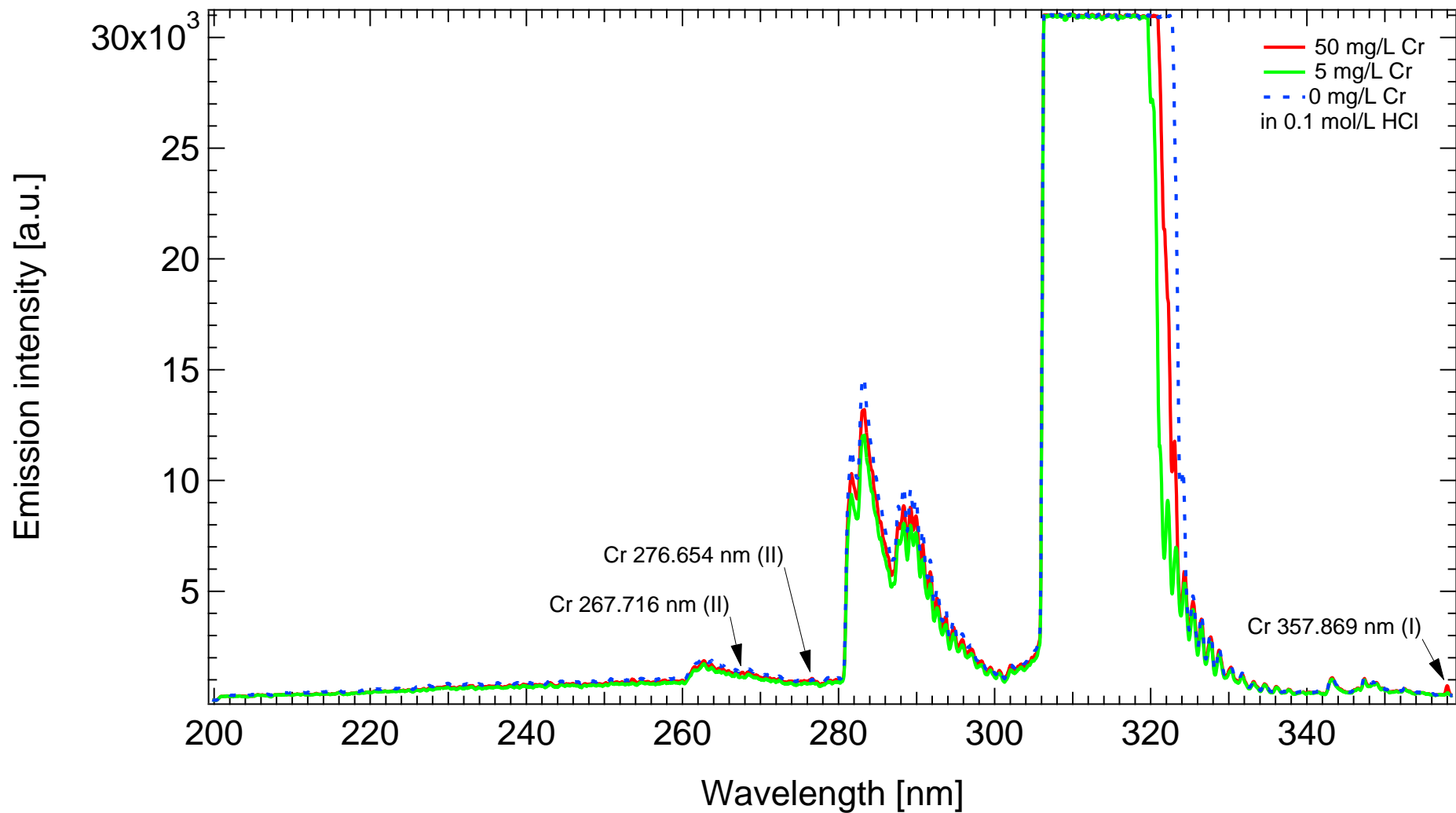


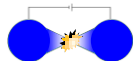


Cr

MH-5000 s2035
LepiCuve-C

Conditions: 900 V, (ON: 2 ms / OFF: 60 ms) × 70 pulses





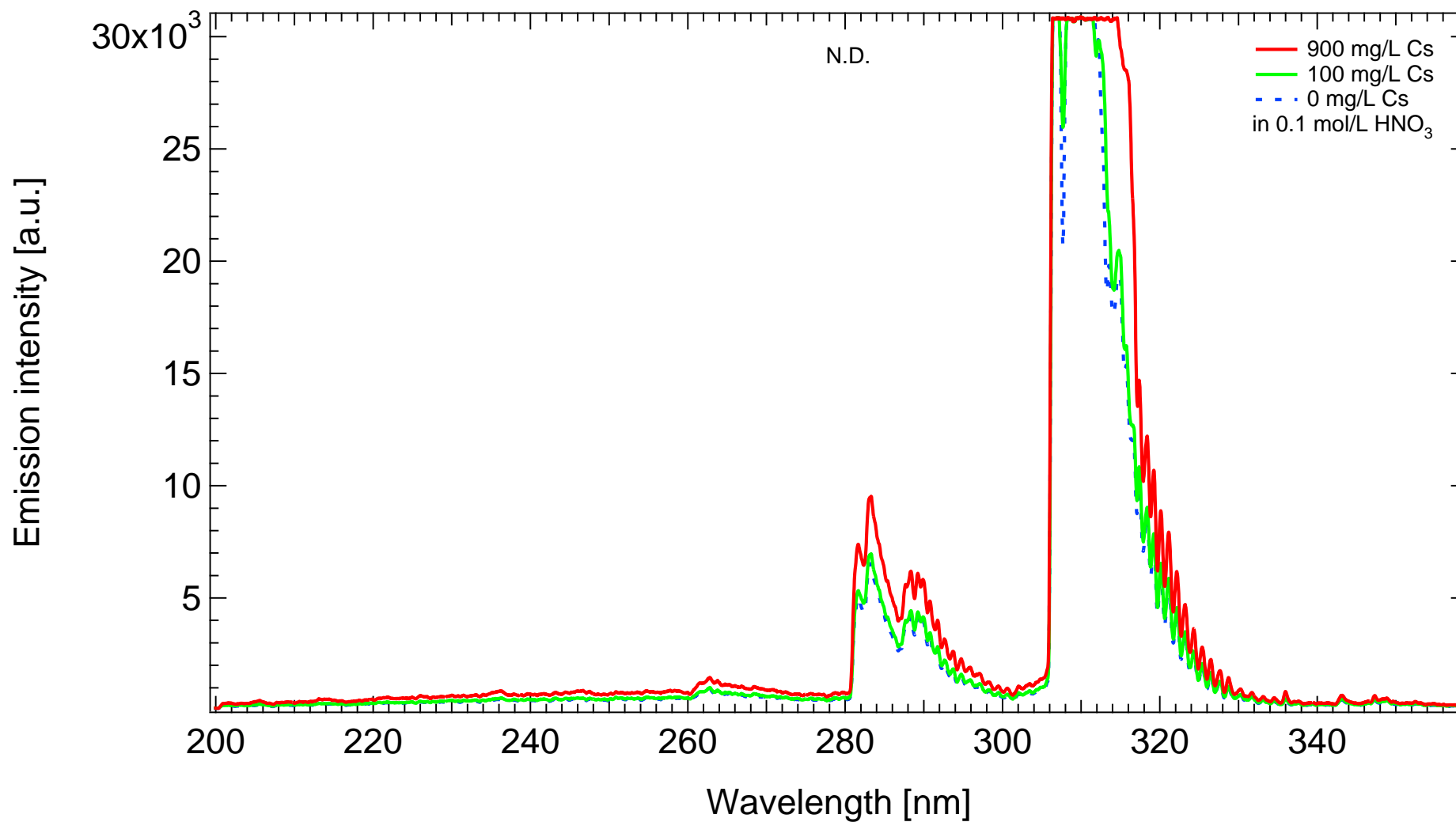
Spectra [T00100E]

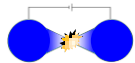
Cs

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C



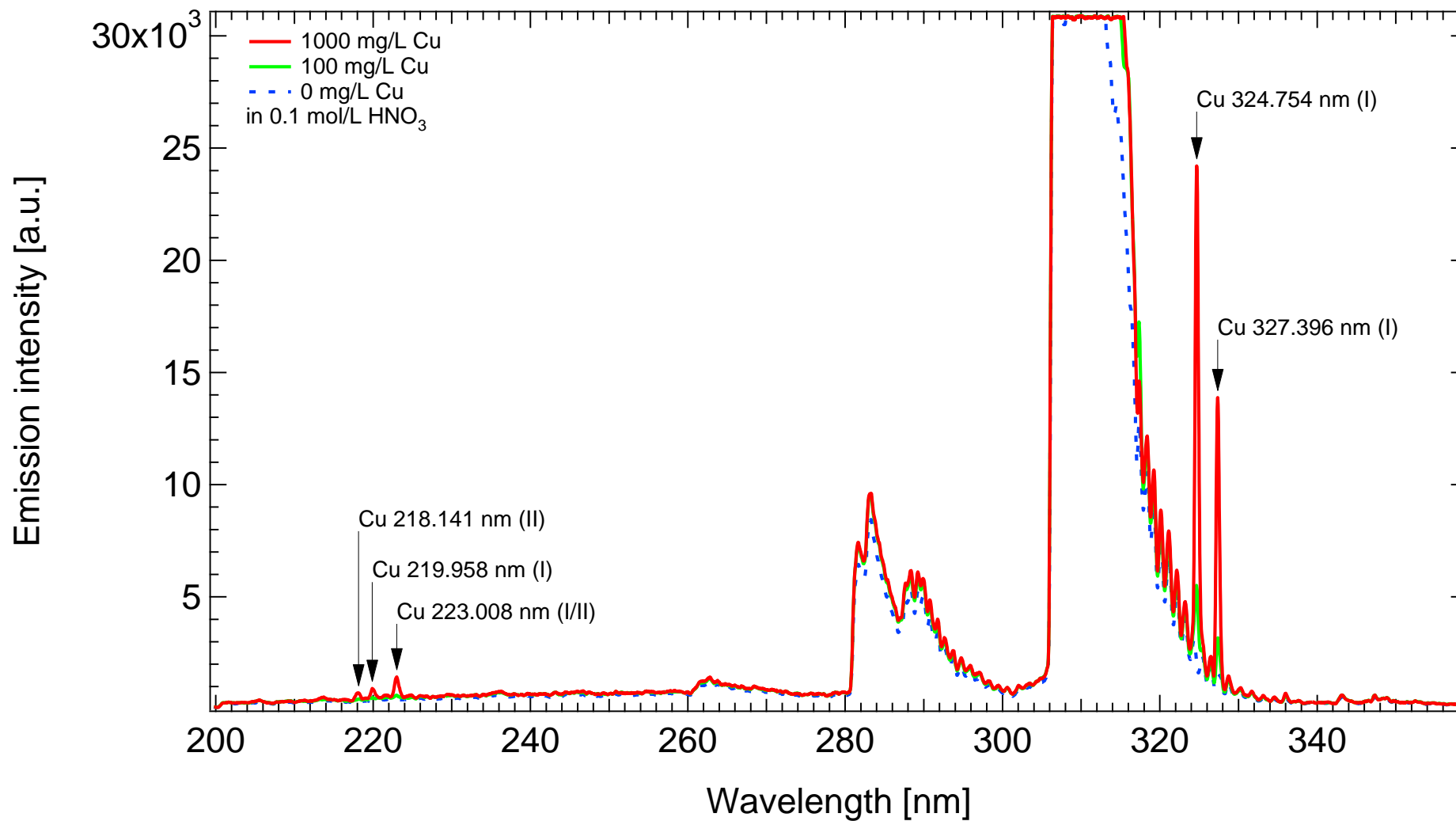


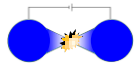
Cu

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C

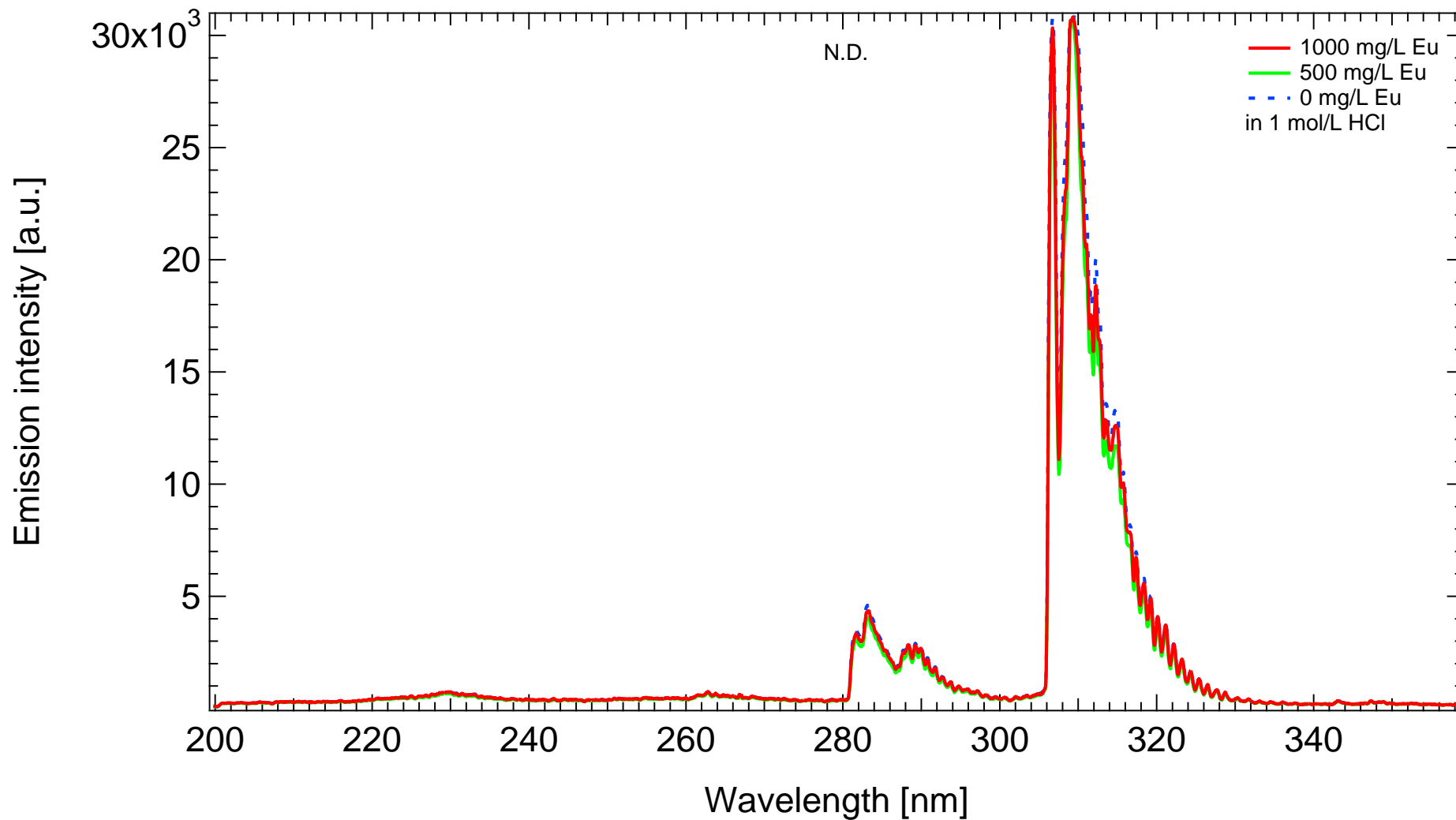


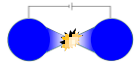


Eu

MH-5000 s2035
LepiCuve-C

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 30 pulses

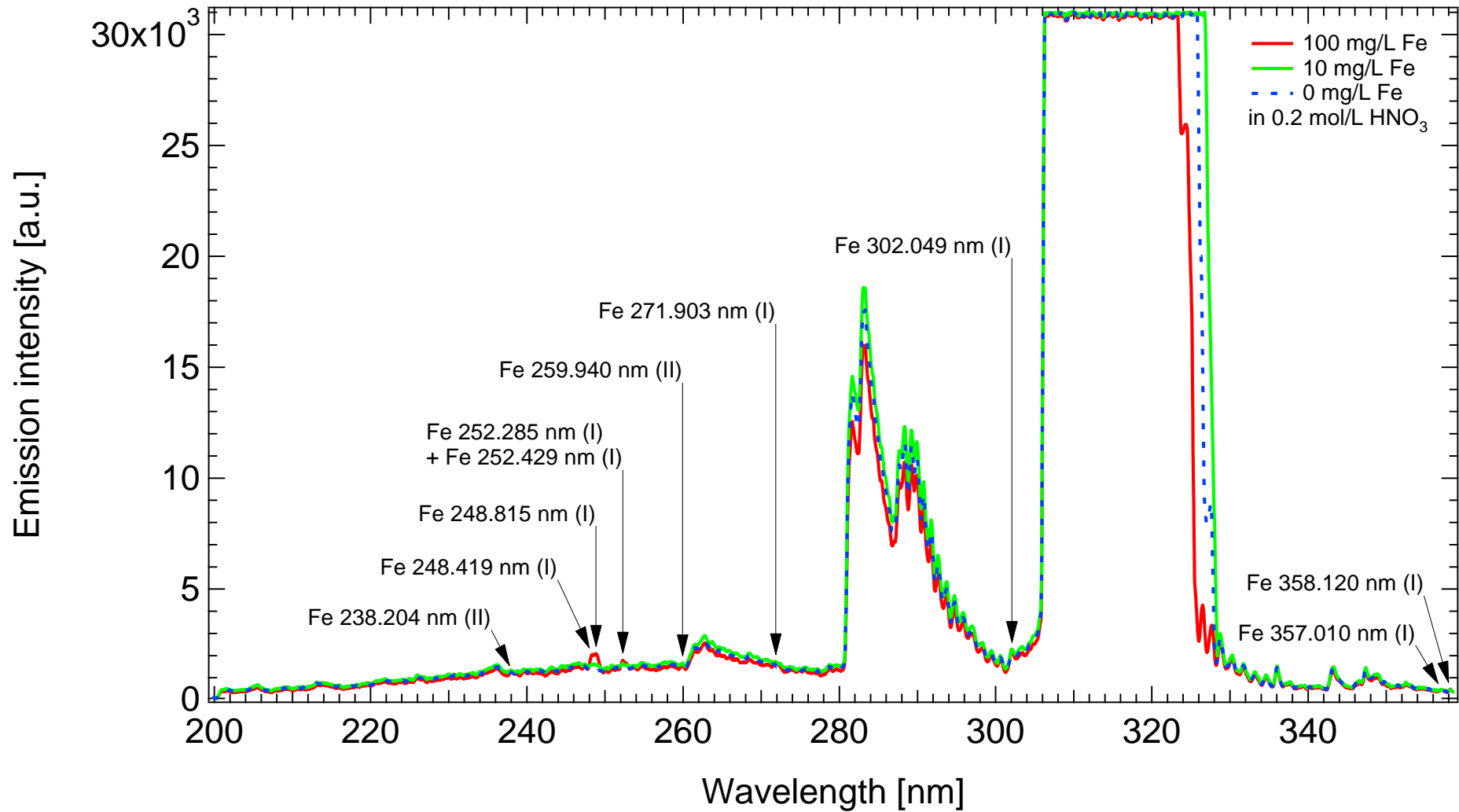


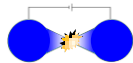


Fe

MH-5000 s2035
LepiCuve-C

Conditions: 900 V, (ON: 2 ms / OFF: 80 ms) × 70 pulses

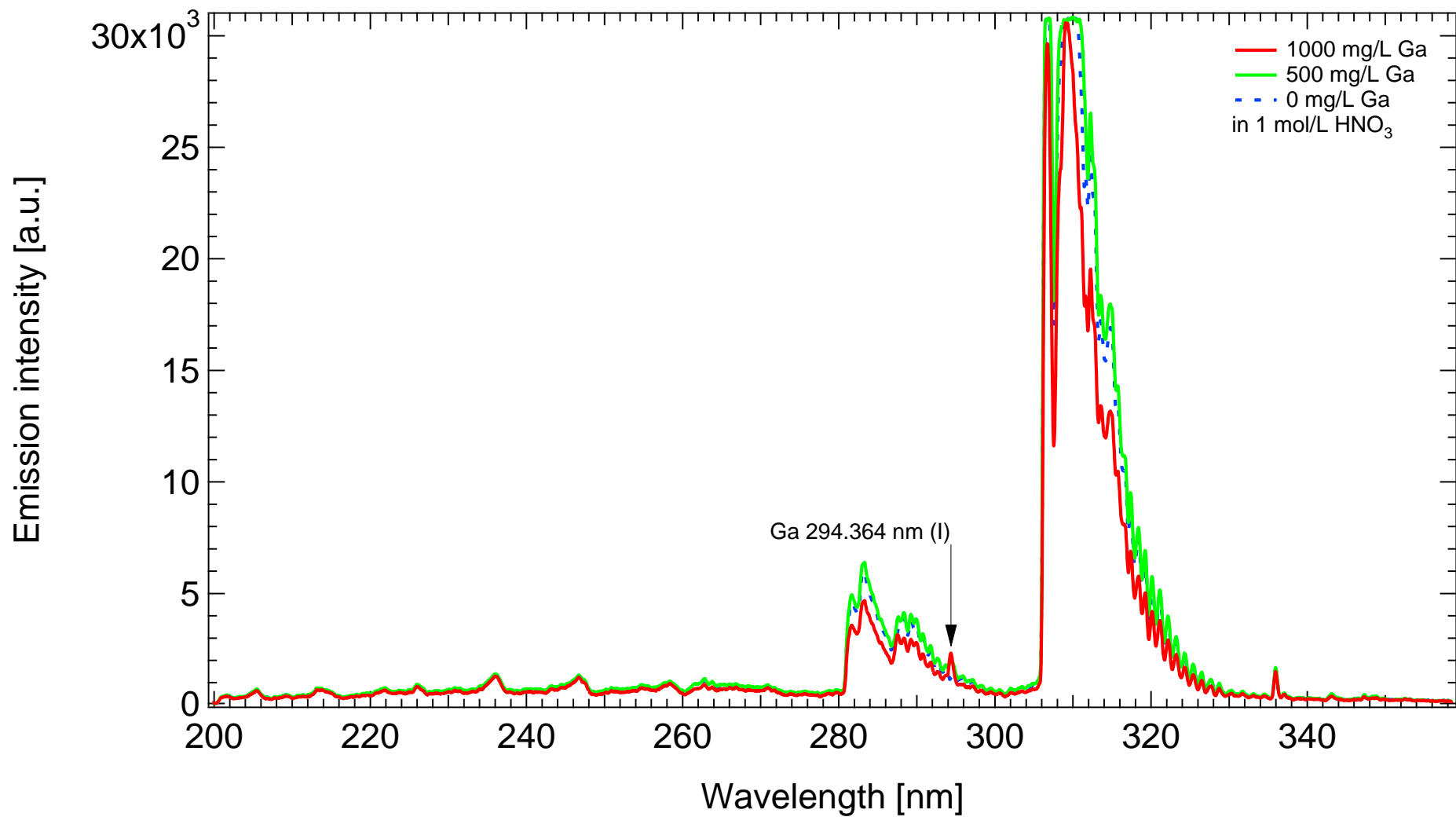


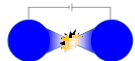


Ga

MH-5000 s2035
LepiCuve-C

Conditions: 700 V, (ON: 2 ms / OFF: 60 ms) × 40 pulses



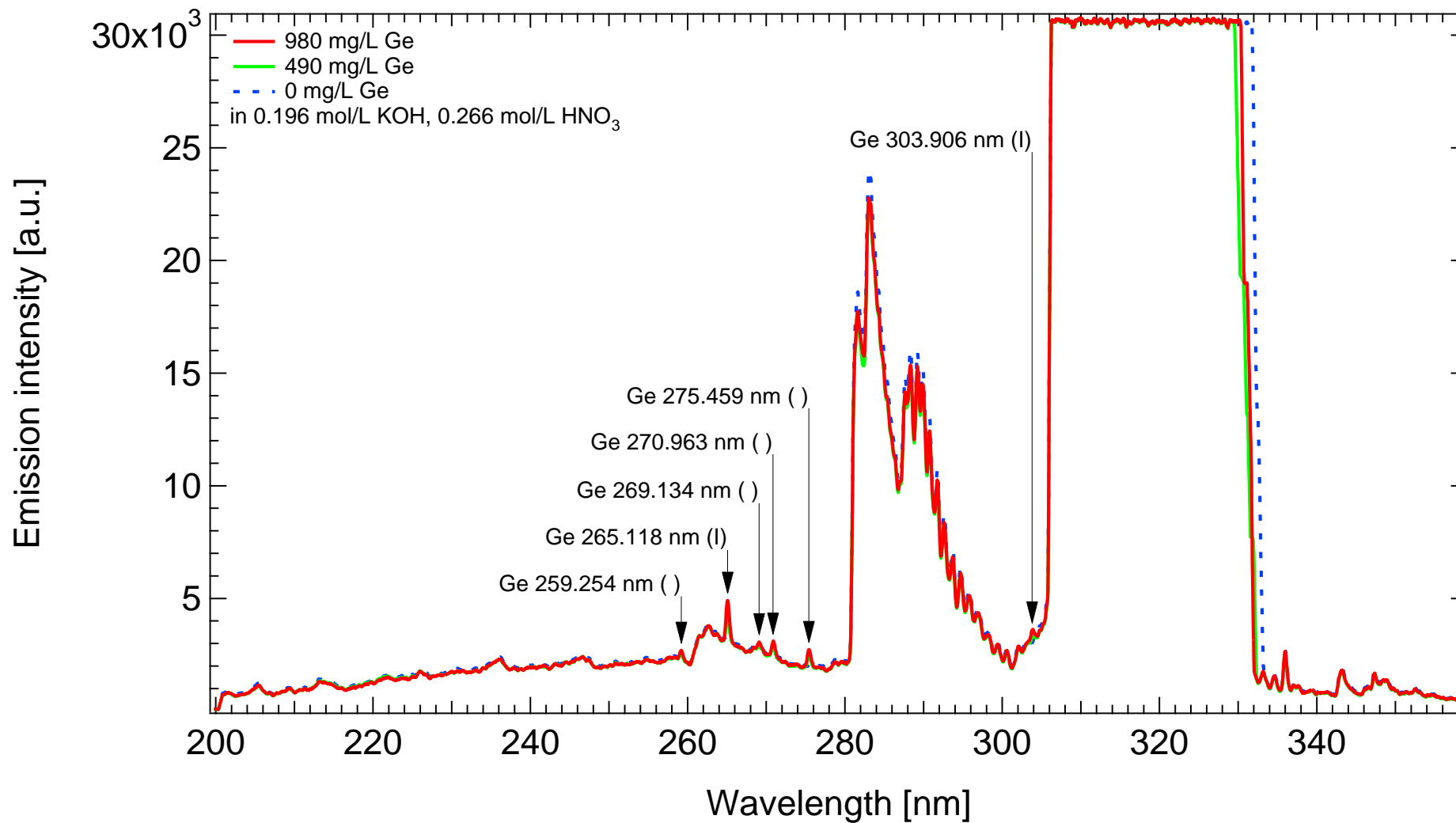


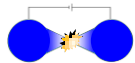
Ge

MH-5000 s2035

Conditions: 850 V, (ON: 2 ms / OFF: 50 ms) × 60 pulses

LepiCuve-C

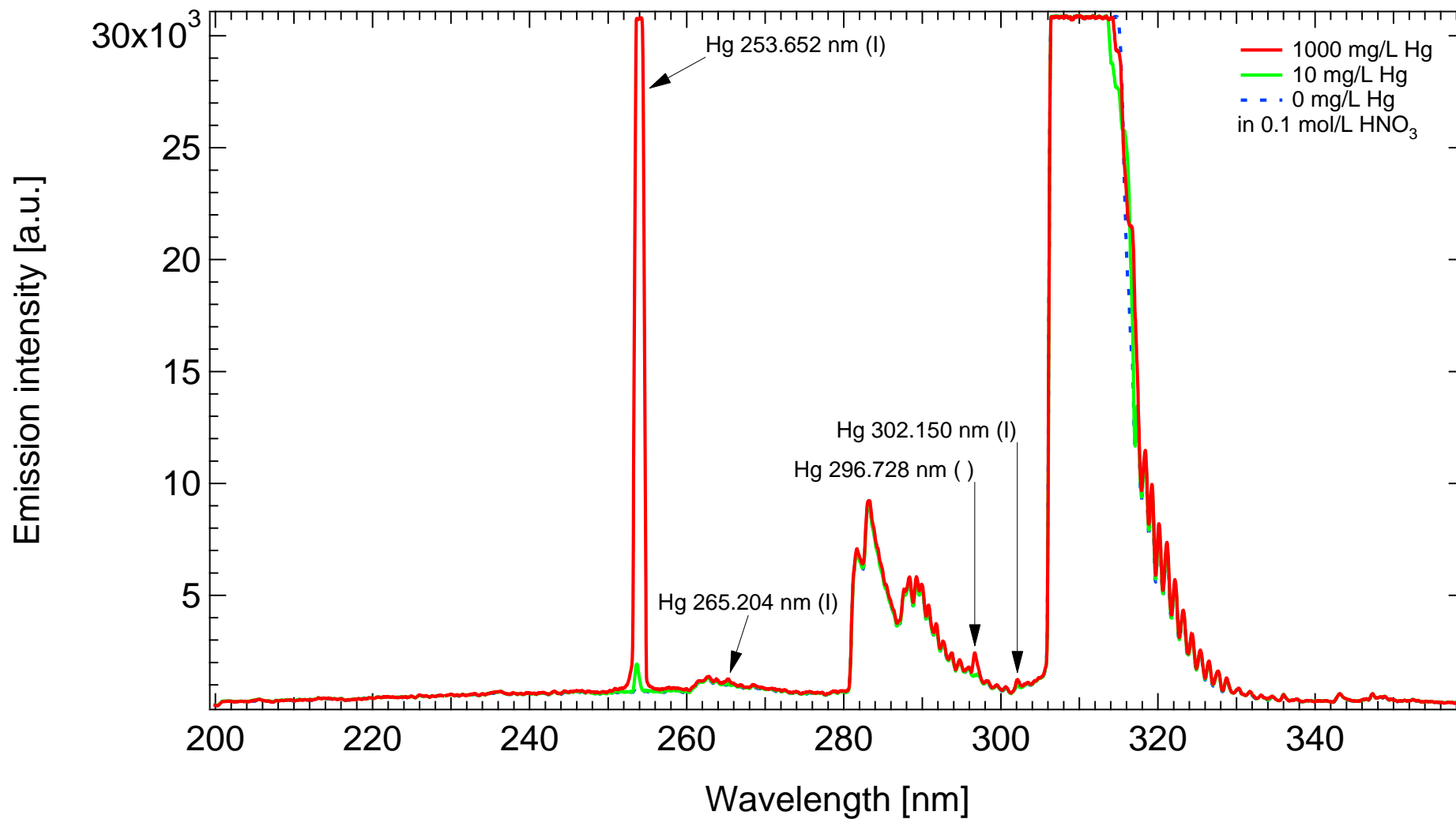


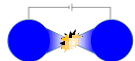


Hg

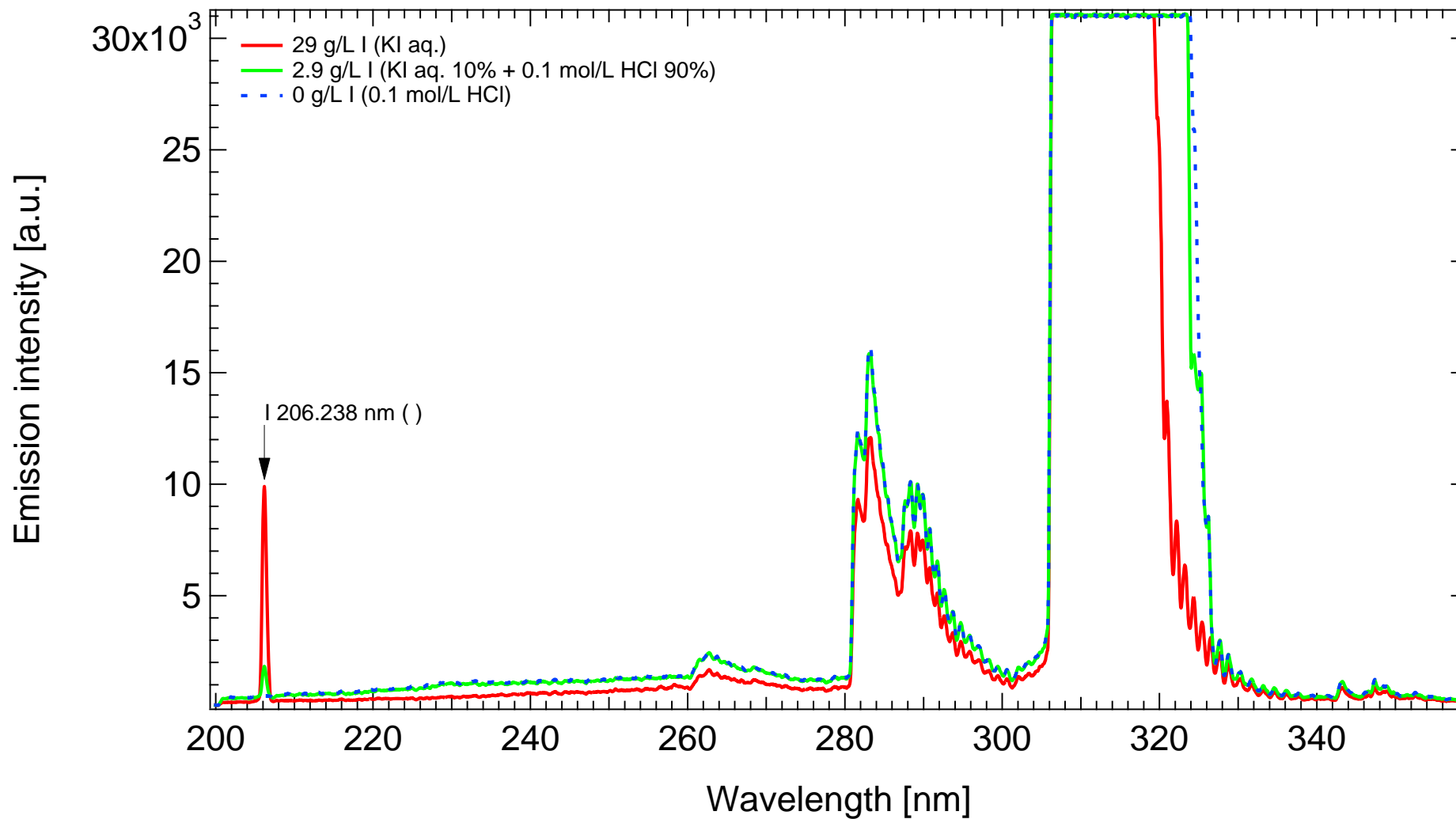
MH-5000 s2035
LepiCuve-C

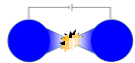
Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses





MH-5000 s2035 Conditions: 960 V, (ON: 2 ms / OFF: 40 ms) × 70 pulses
LepiCuve-C

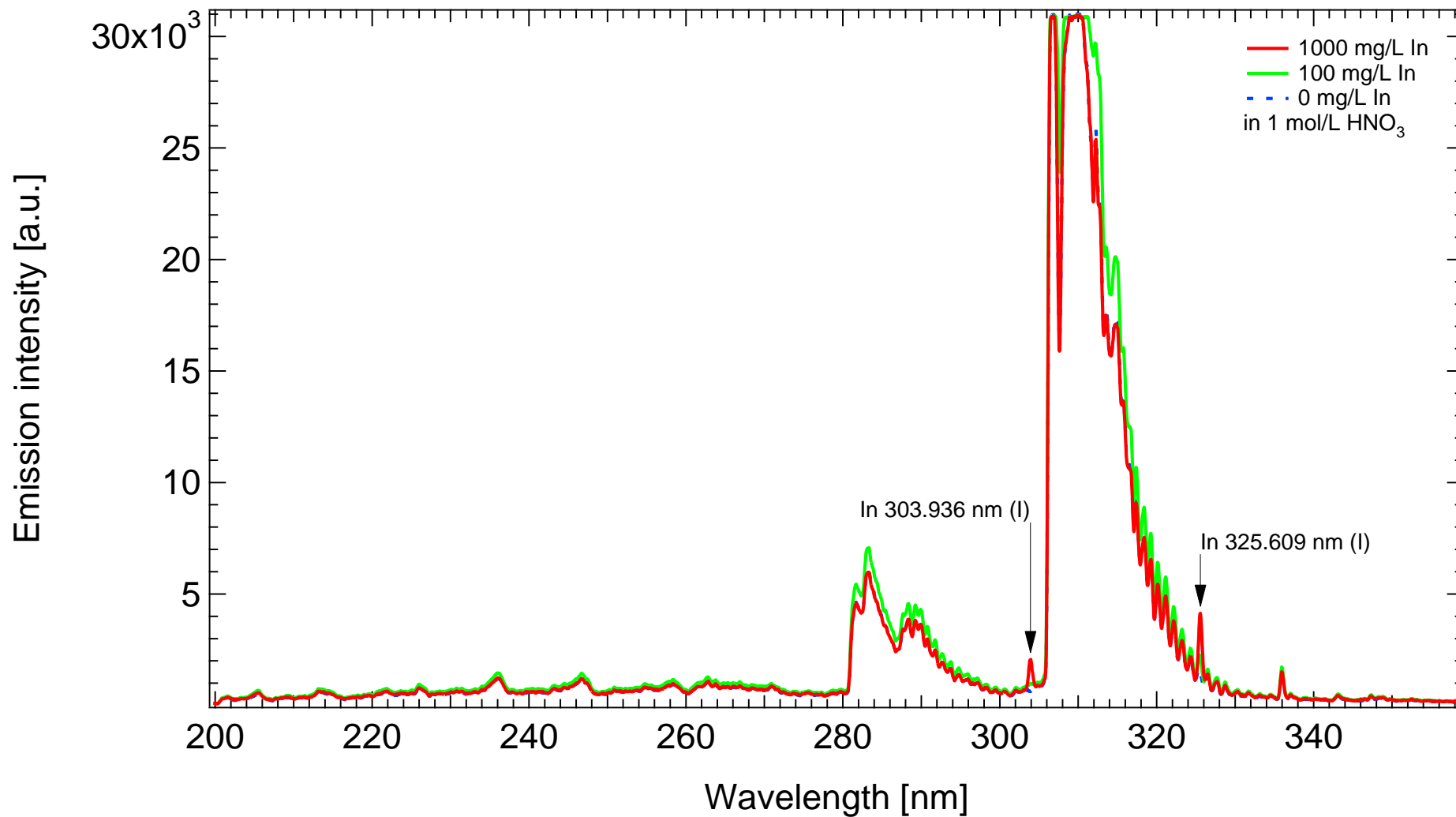


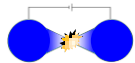


In

MH-5000 s2035
LepiCuve-C

Conditions: 700 V, (ON: 2 ms / OFF: 60 ms) × 40 pulses

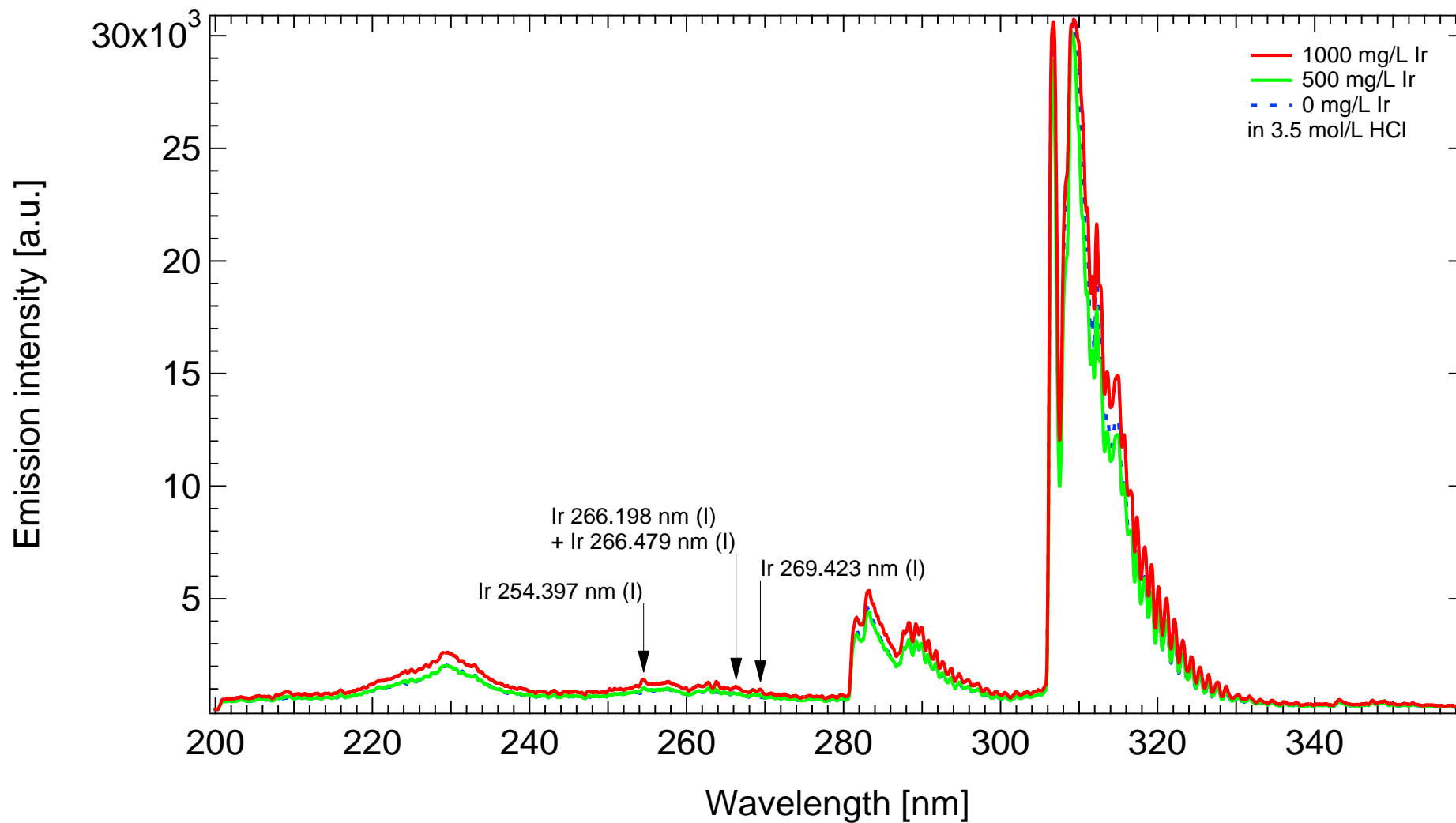


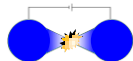


Ir

MH-5000 s2035
LepiCuve-C

Conditions: 700 V, (ON: 2 ms / OFF: 170 ms) × 20 pulses

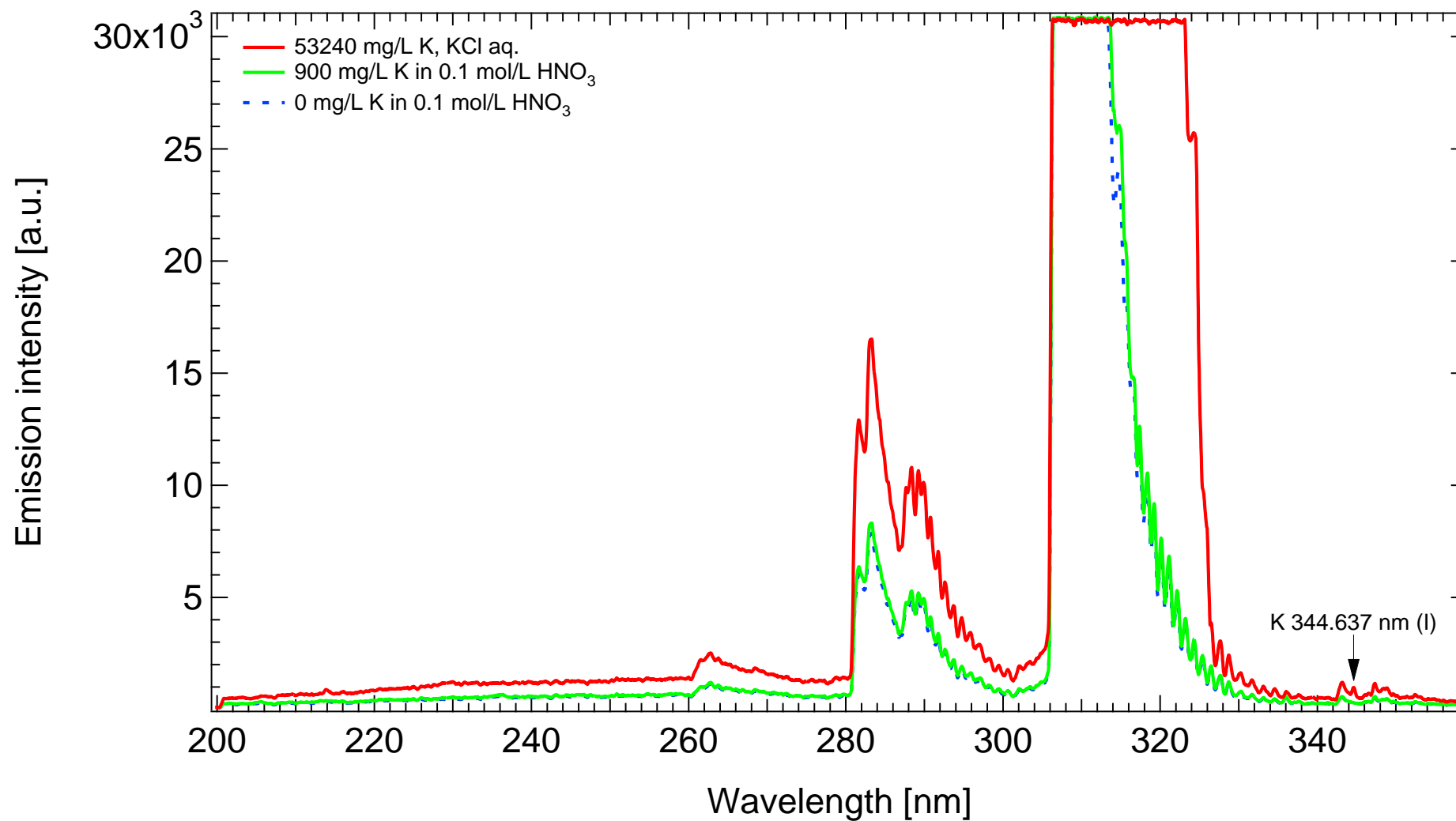


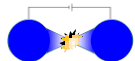


K

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 60 ms) × 40 pulses

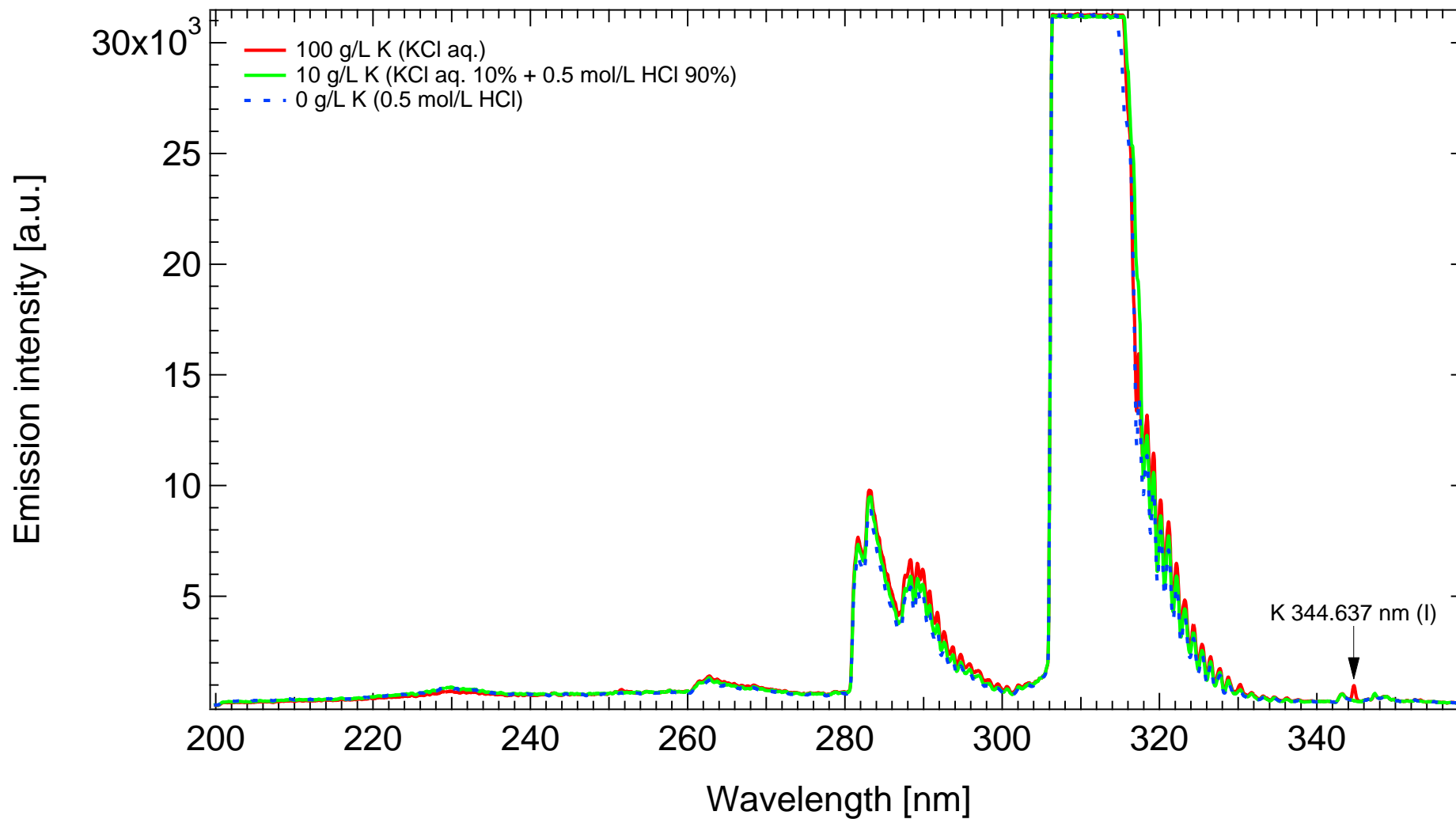


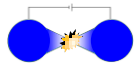


K

MH-5000 s2035
LepiCuve-C

Conditions: 750 V, (ON: 2 ms / OFF: 50 ms) × 40 pulses





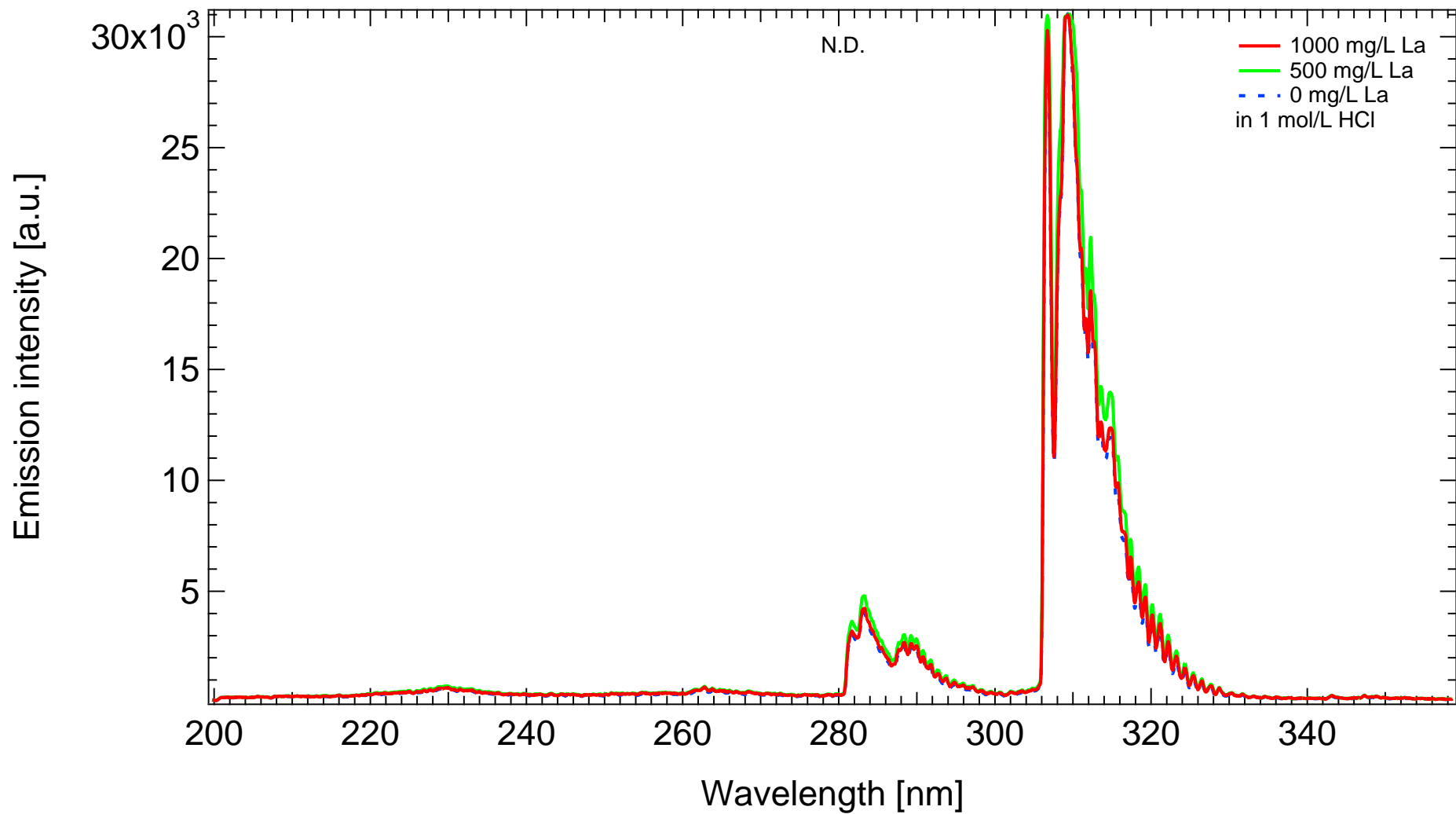
Spectra [T00100E]

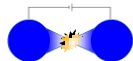
La

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 30 pulses

LepiCuve-C





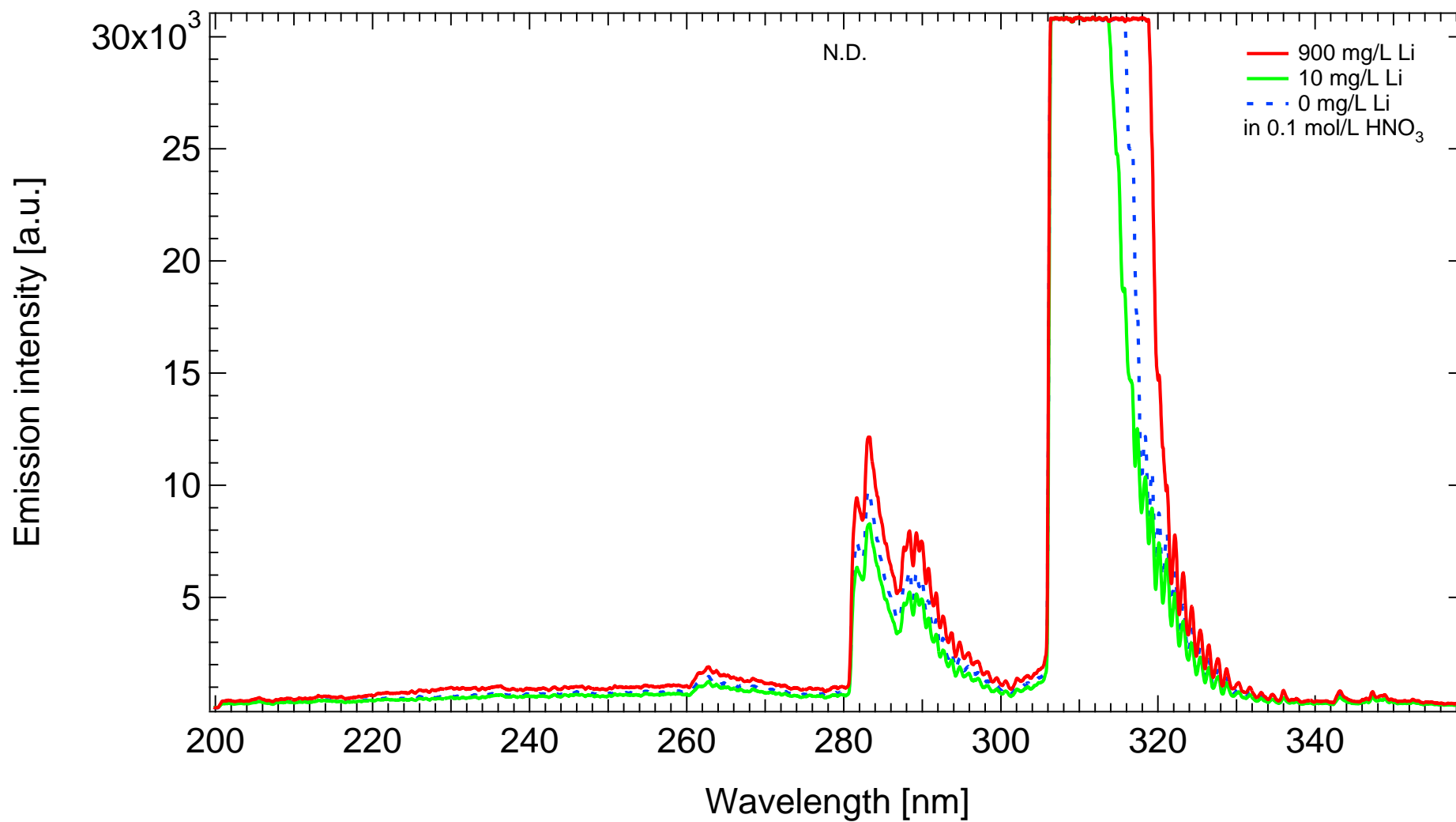
Spectra [T00100E]

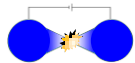
Li

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C

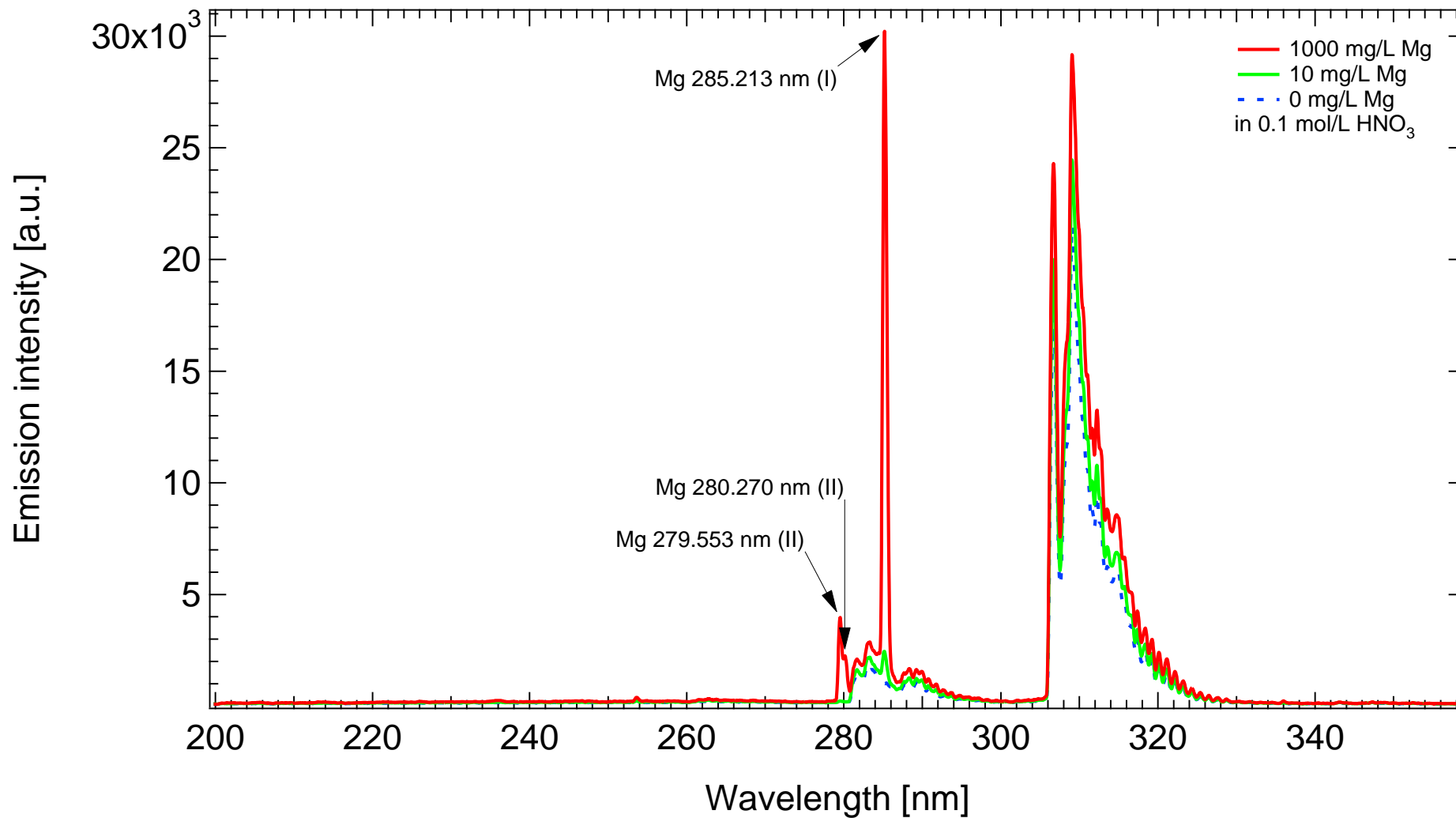


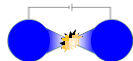


Mg

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 10 pulses



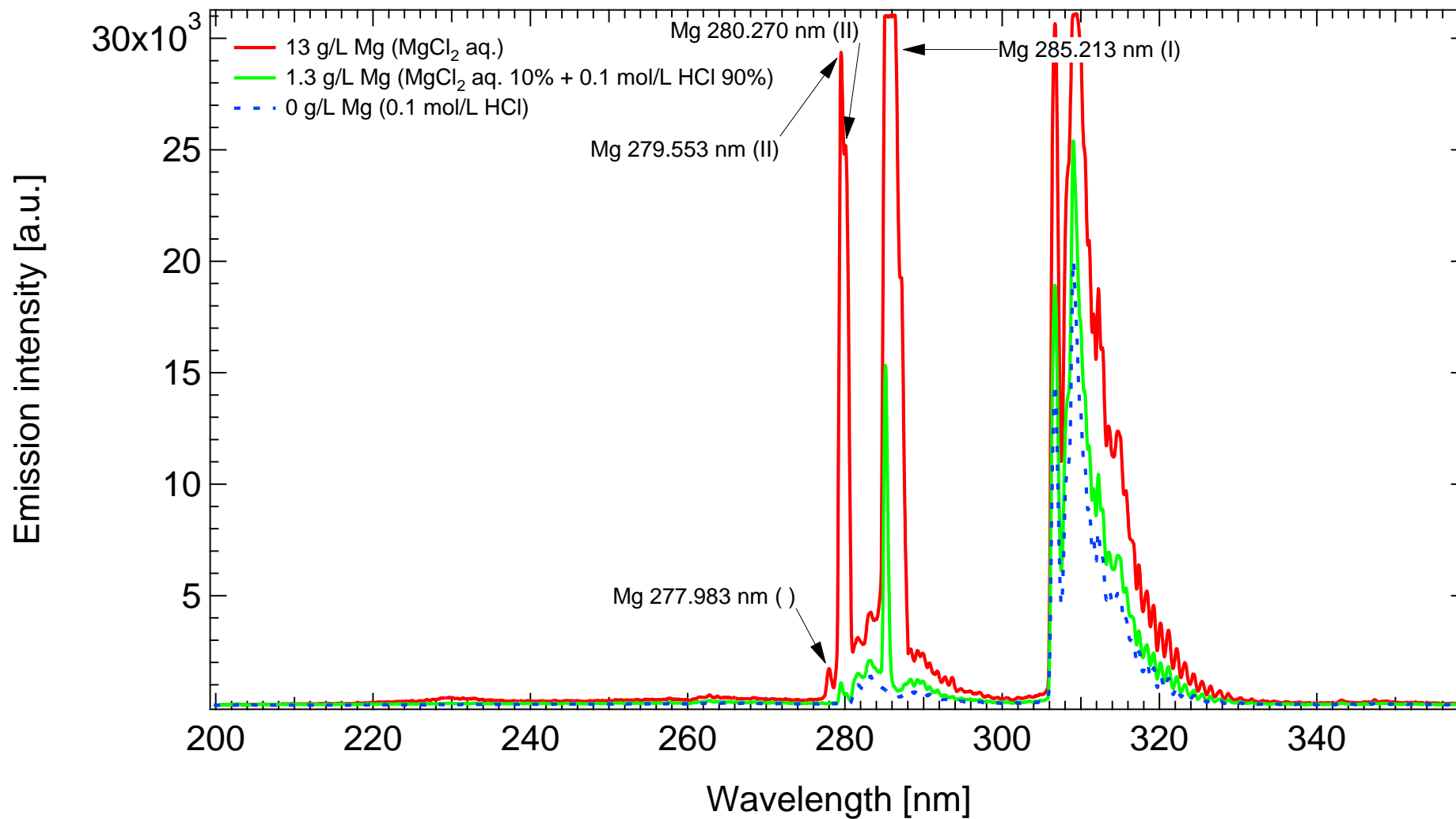


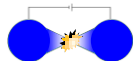
Mg

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C



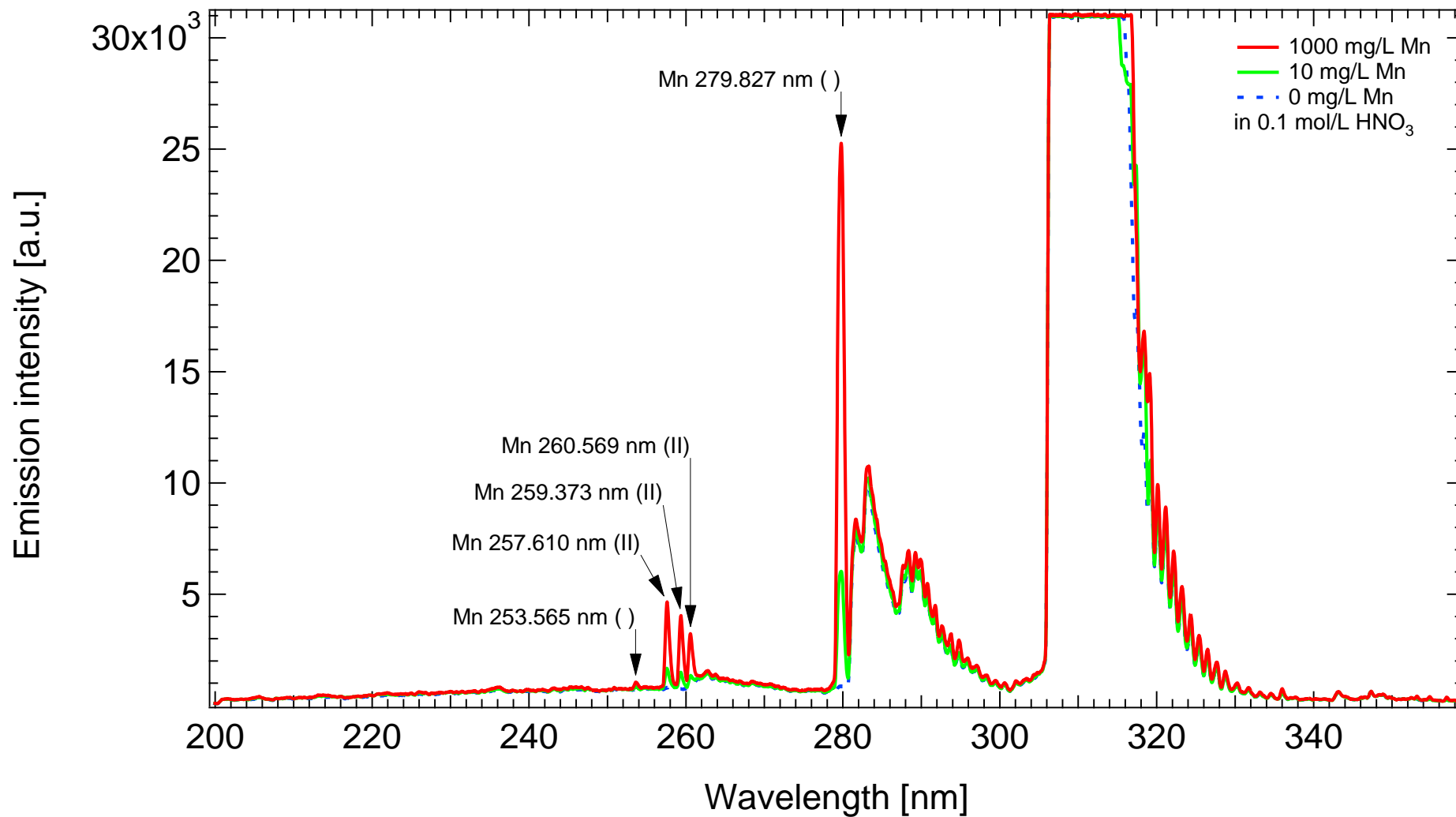


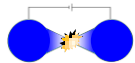
Mn

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C



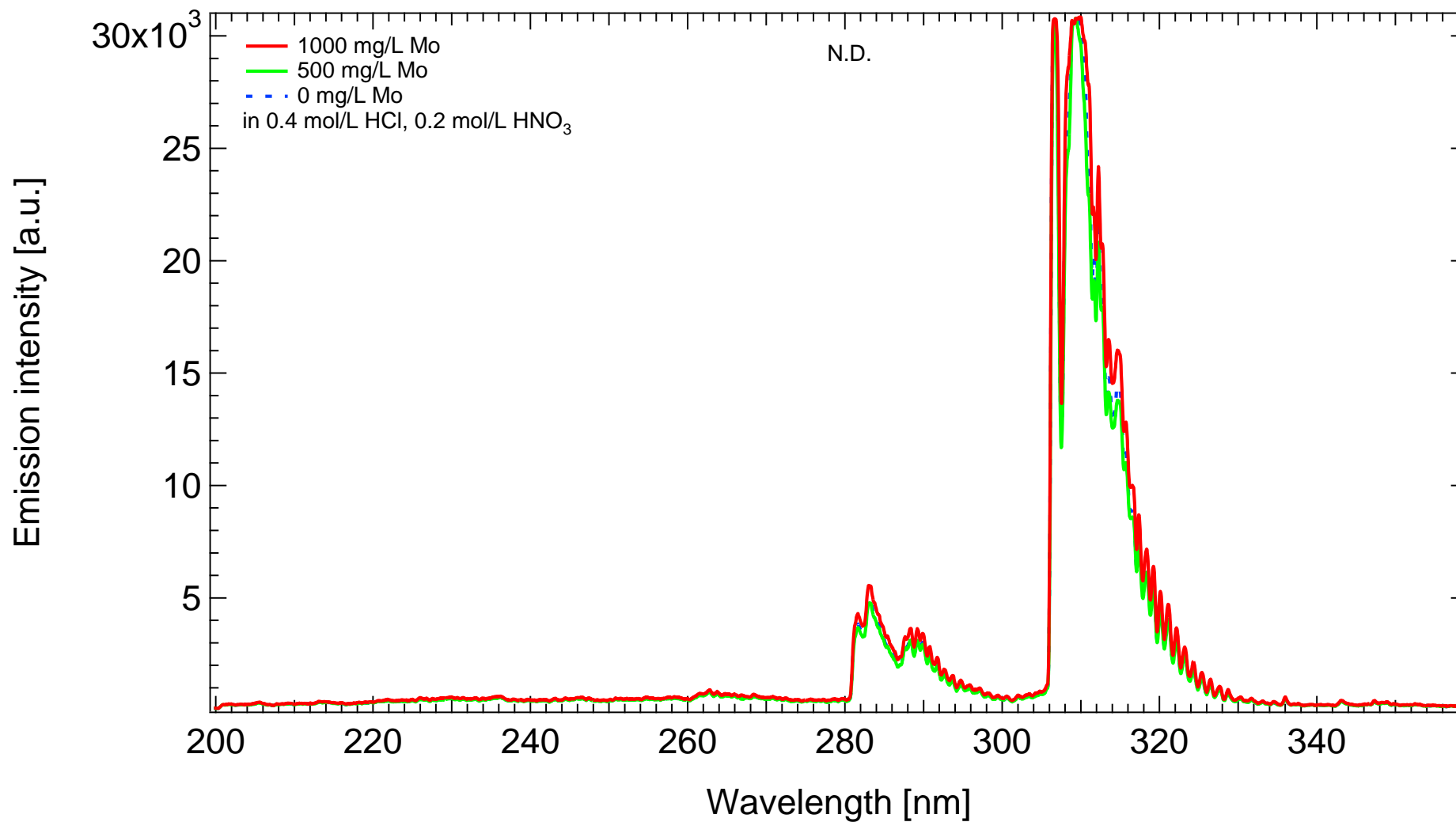


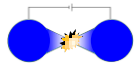
Mo

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 60 ms) × 40 pulses

LepiCuve-C



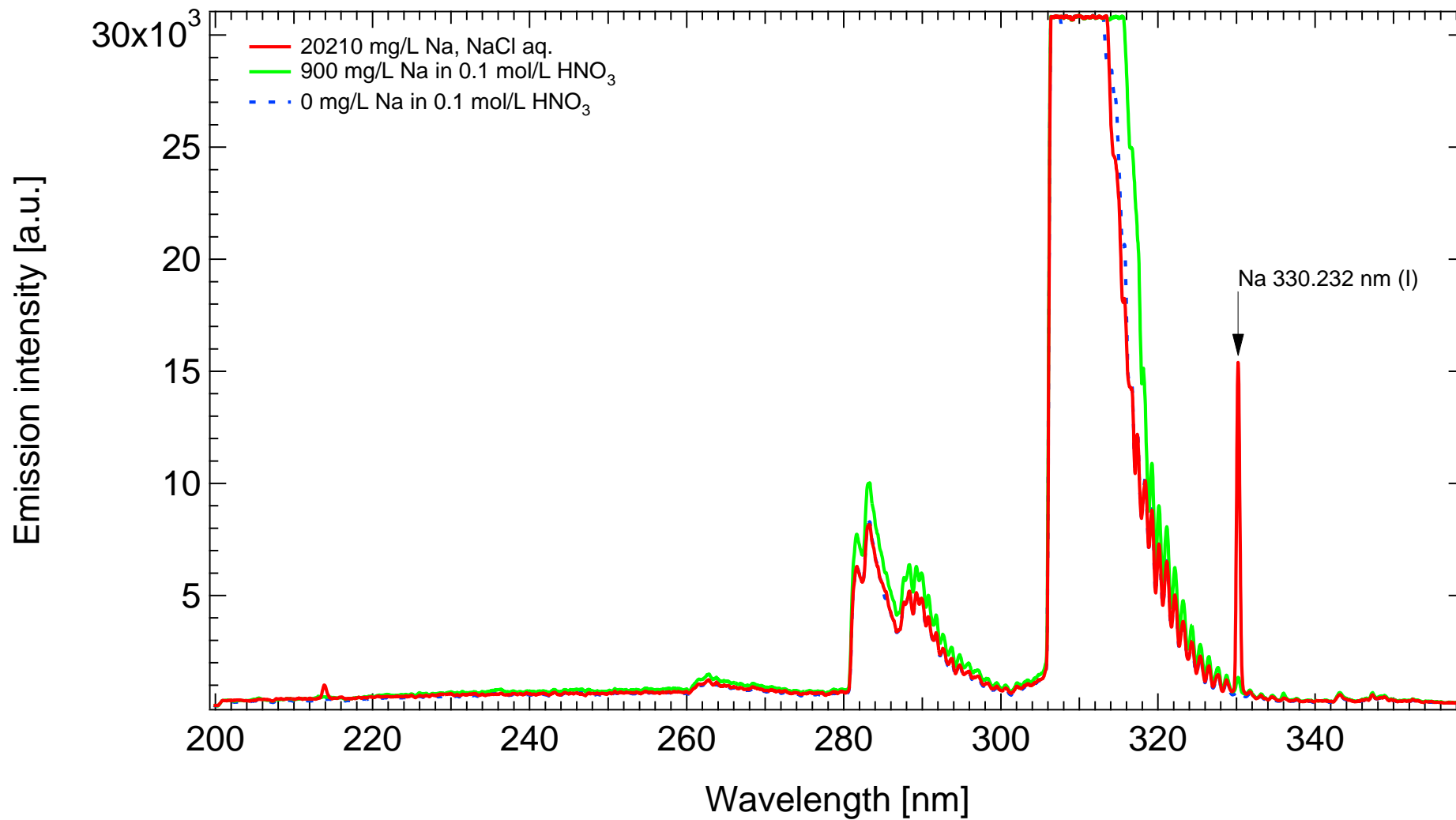


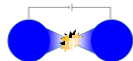
Na

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

LepiCuve-C



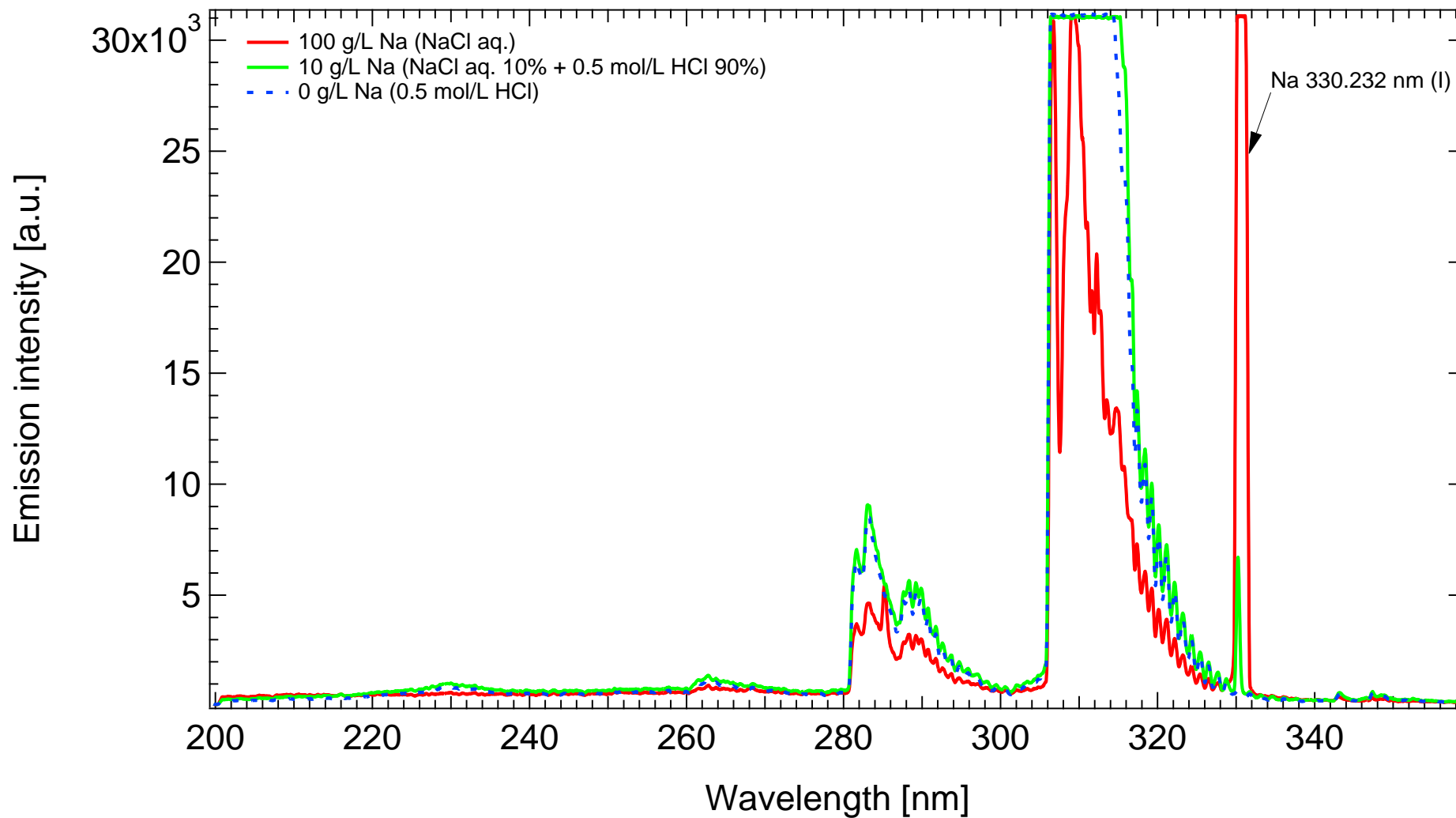


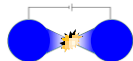
Na

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 50 ms) × 40 pulses

LepiCuve-C

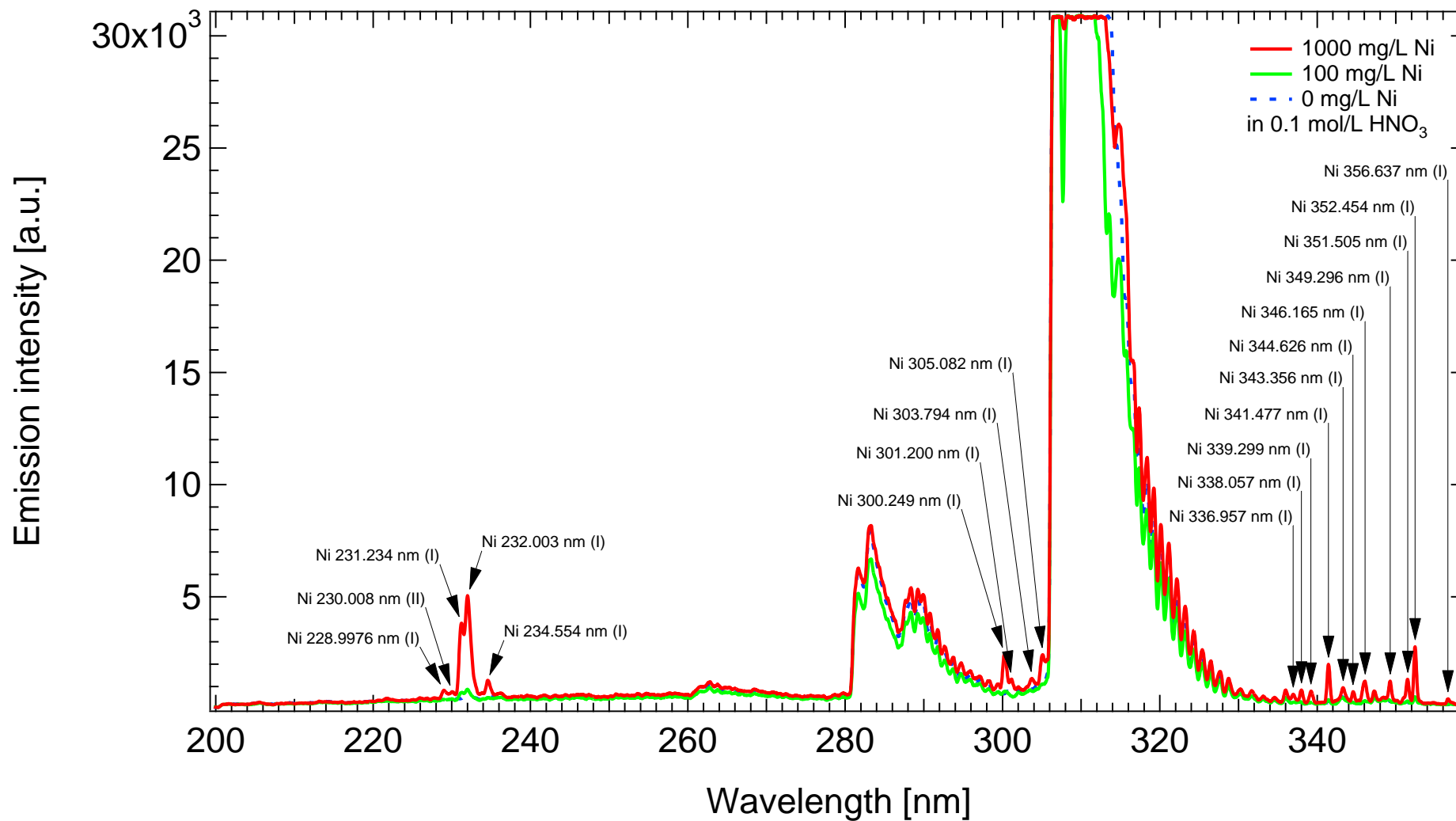


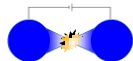


Ni

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

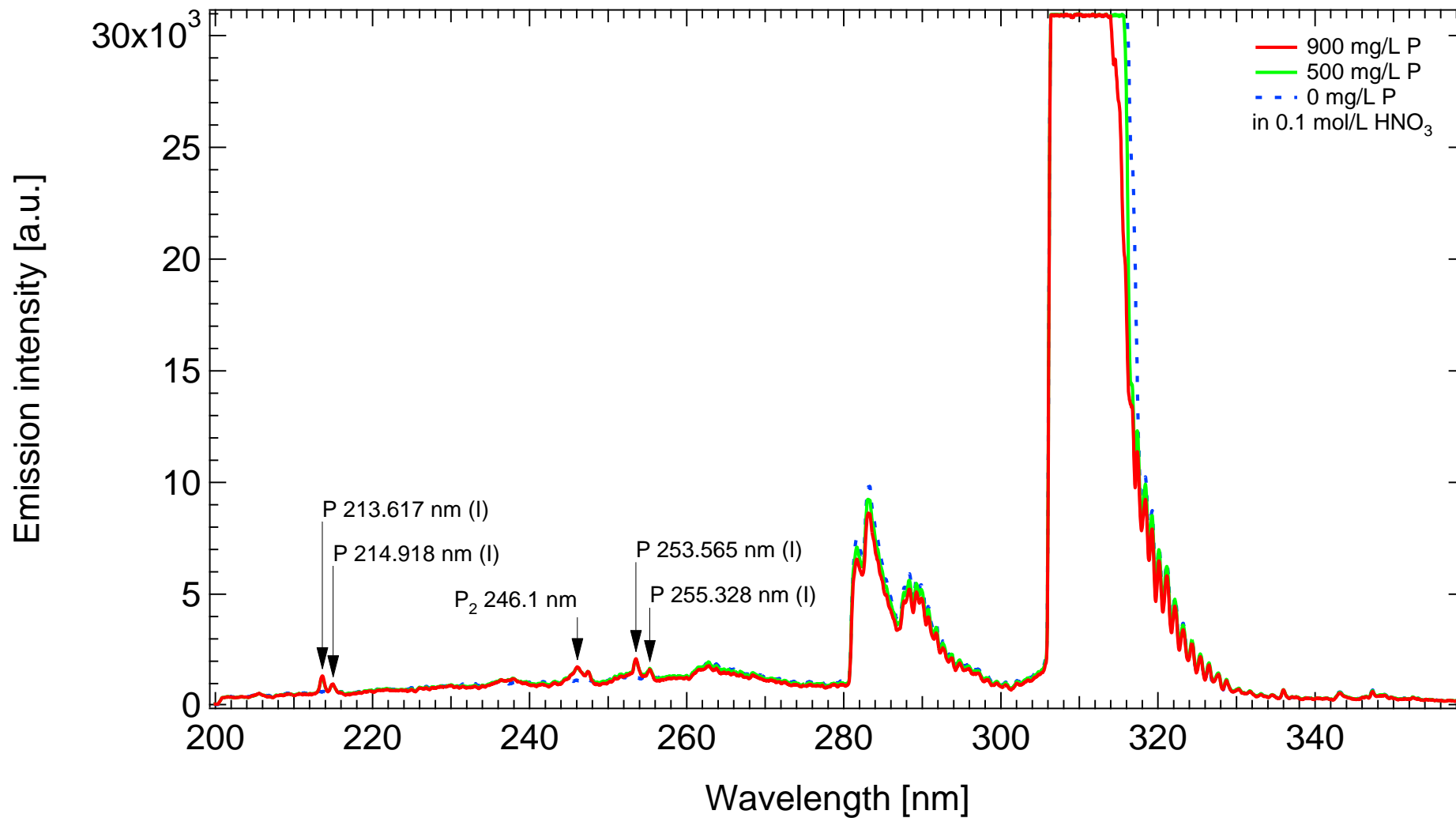


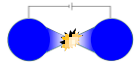


P

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

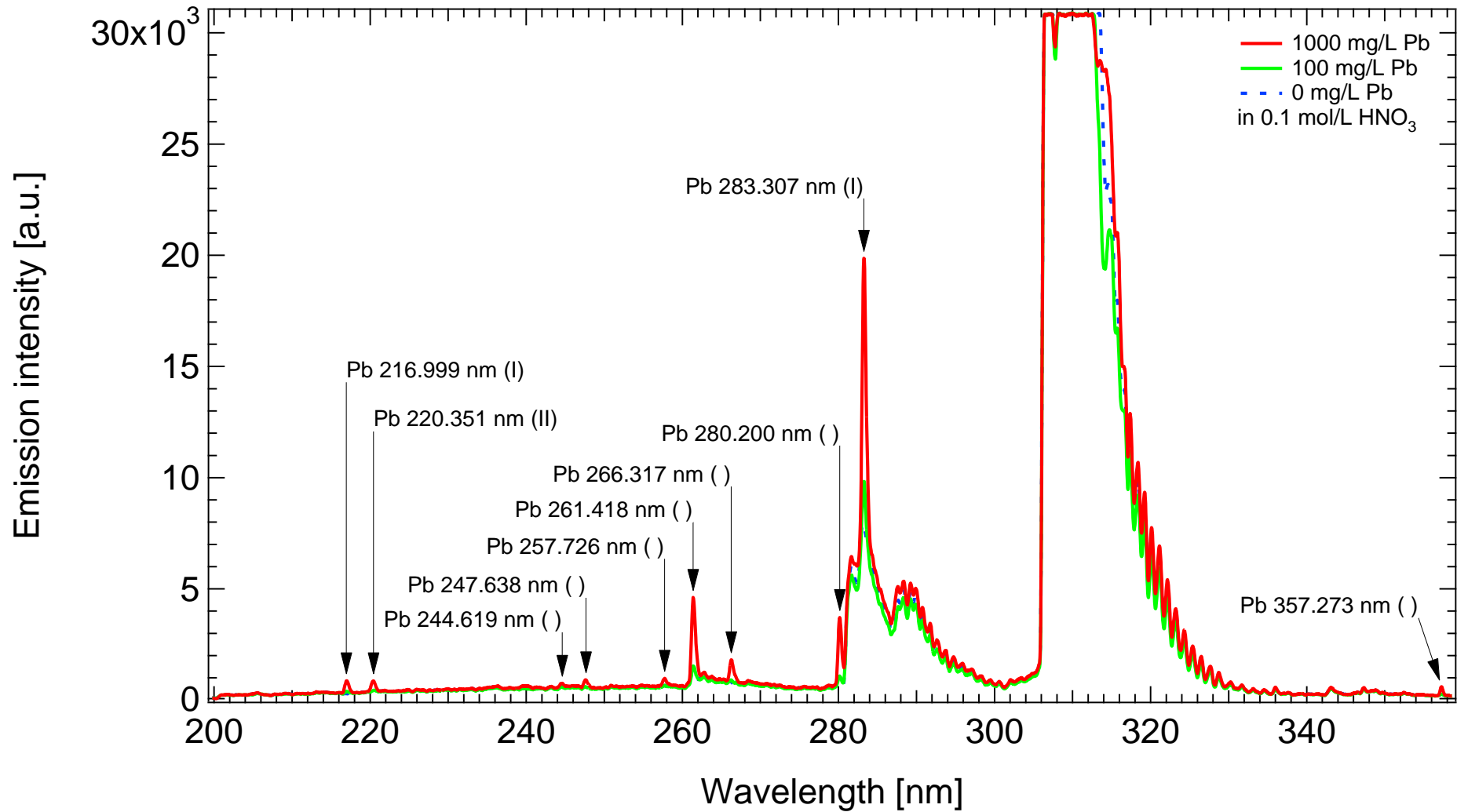


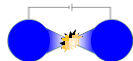


Pb

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses



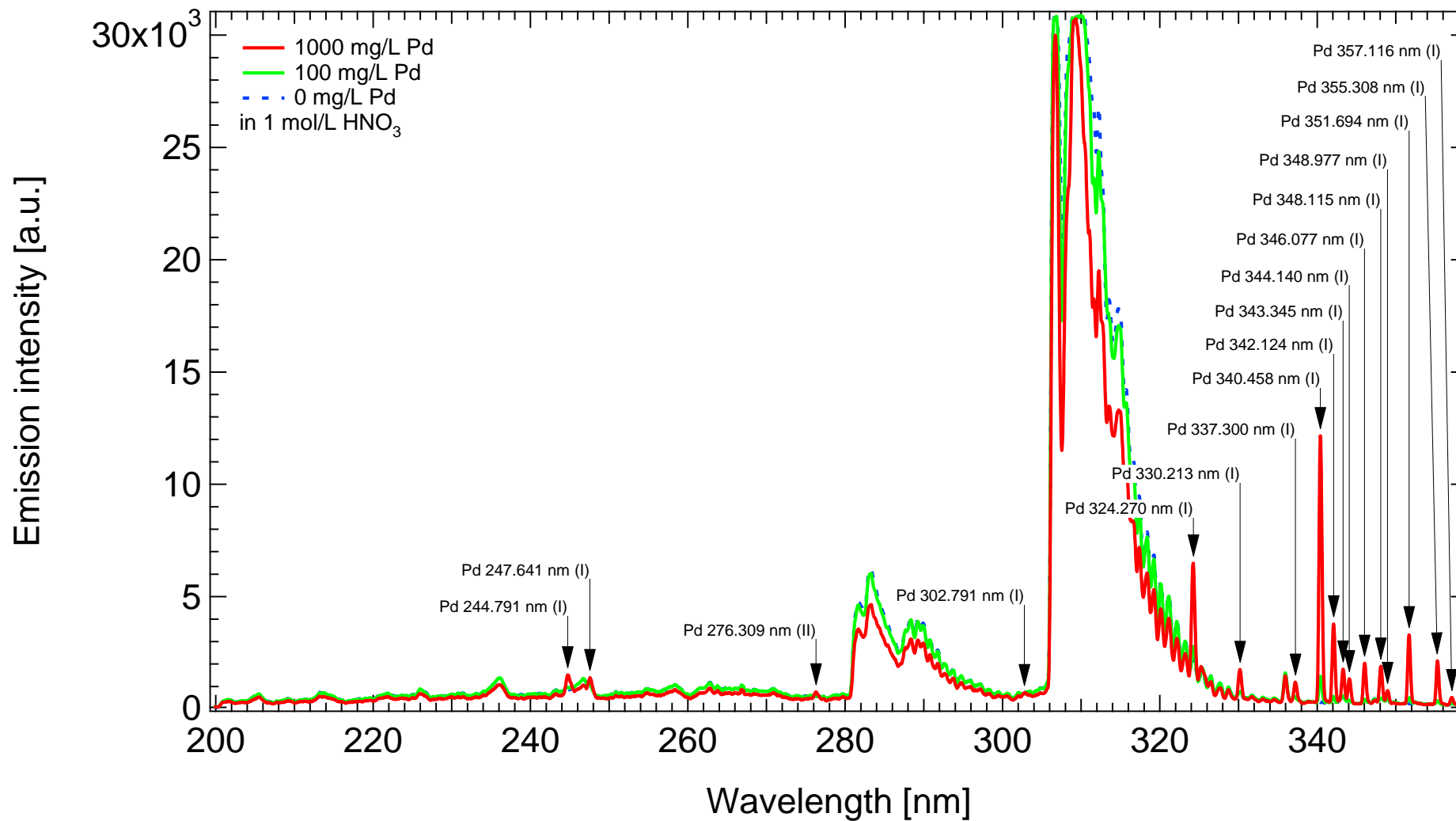


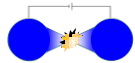
Pd

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 60 ms) × 40 pulses

LepiCuve-C

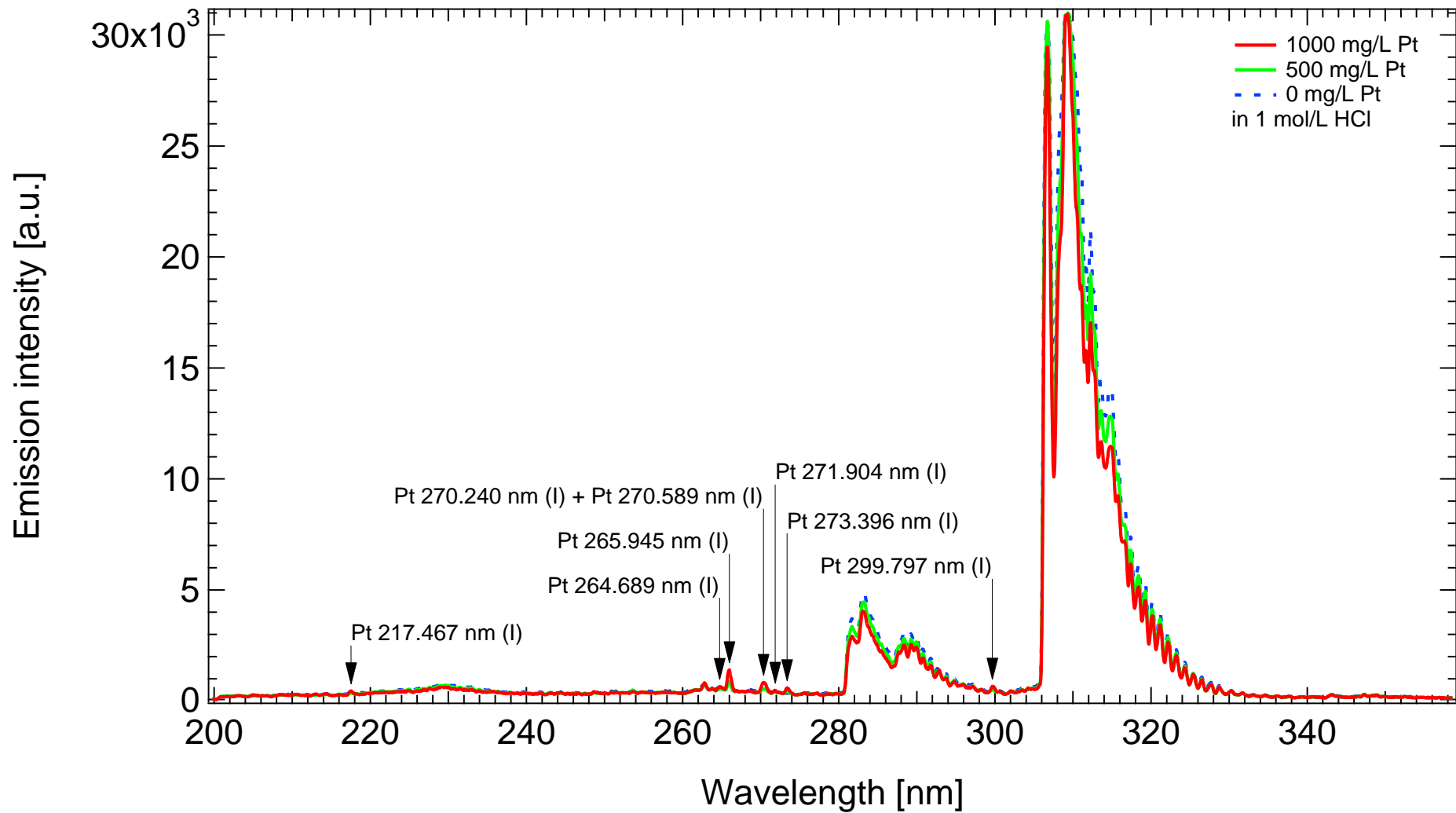


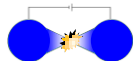


Pt

MH-5000 s2035
LepiCuve-C

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 30 pulses

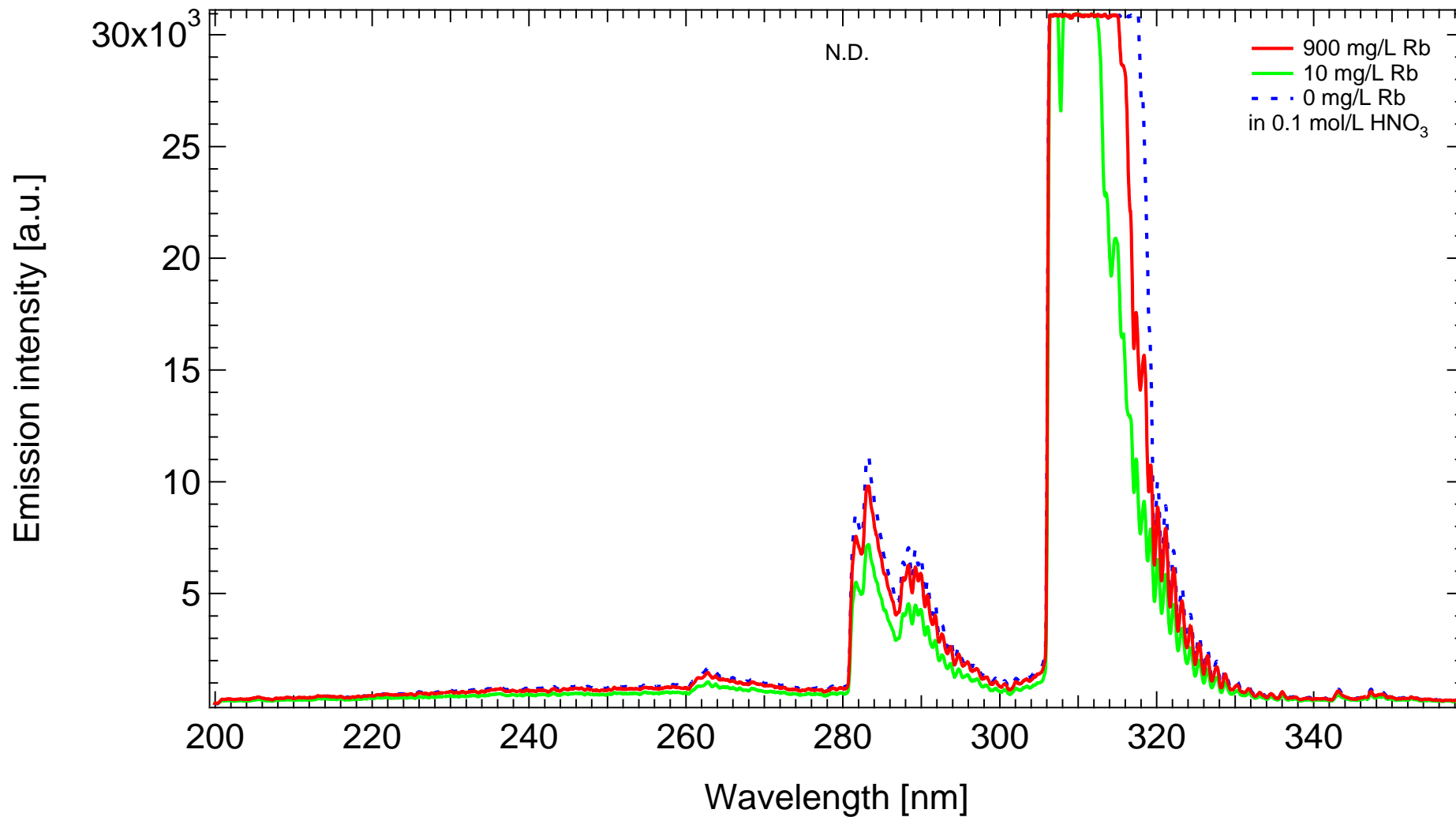


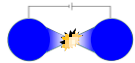


Rb

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

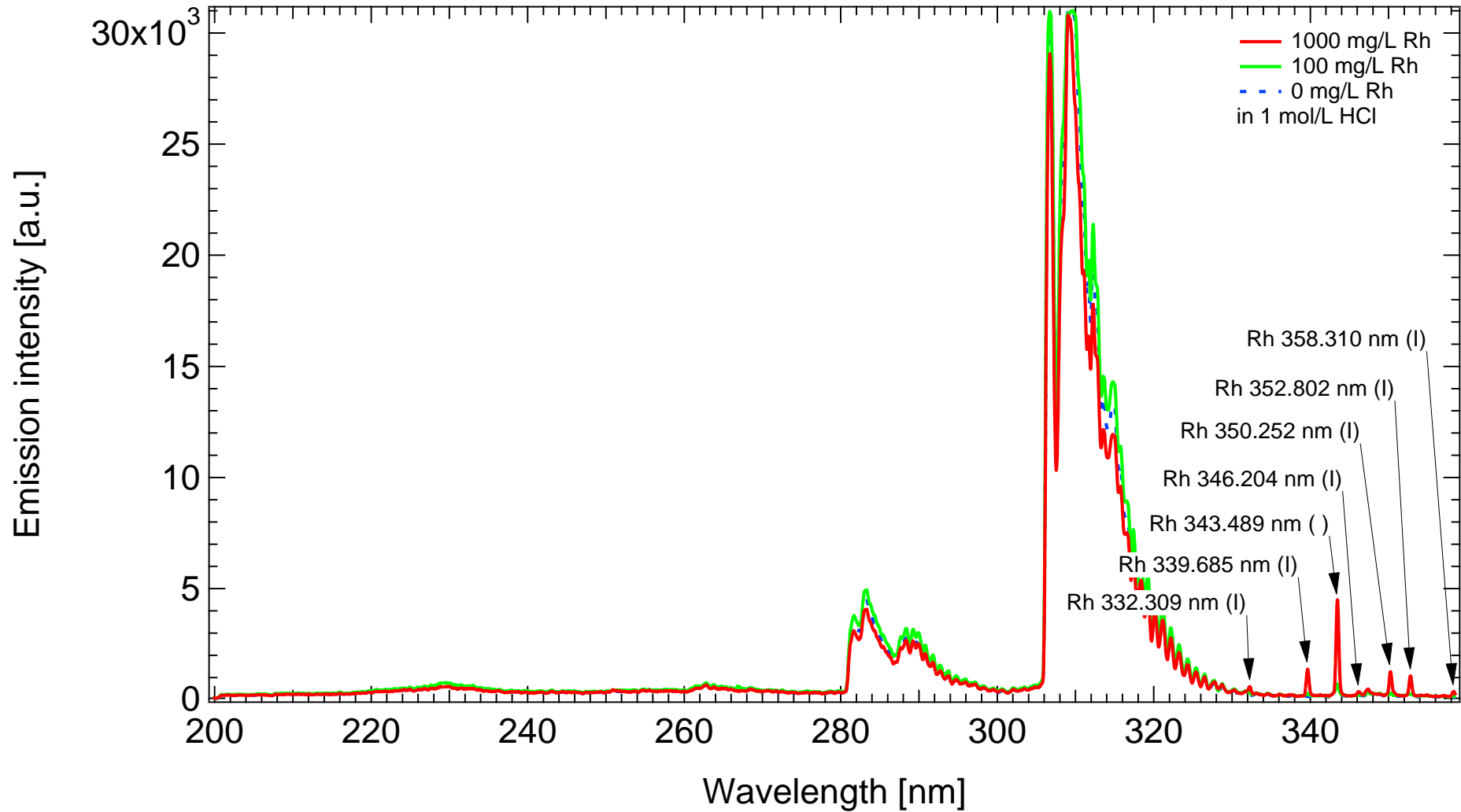


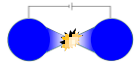


Rh

MH-5000 s2035
LepiCuve-C

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 30 pulses



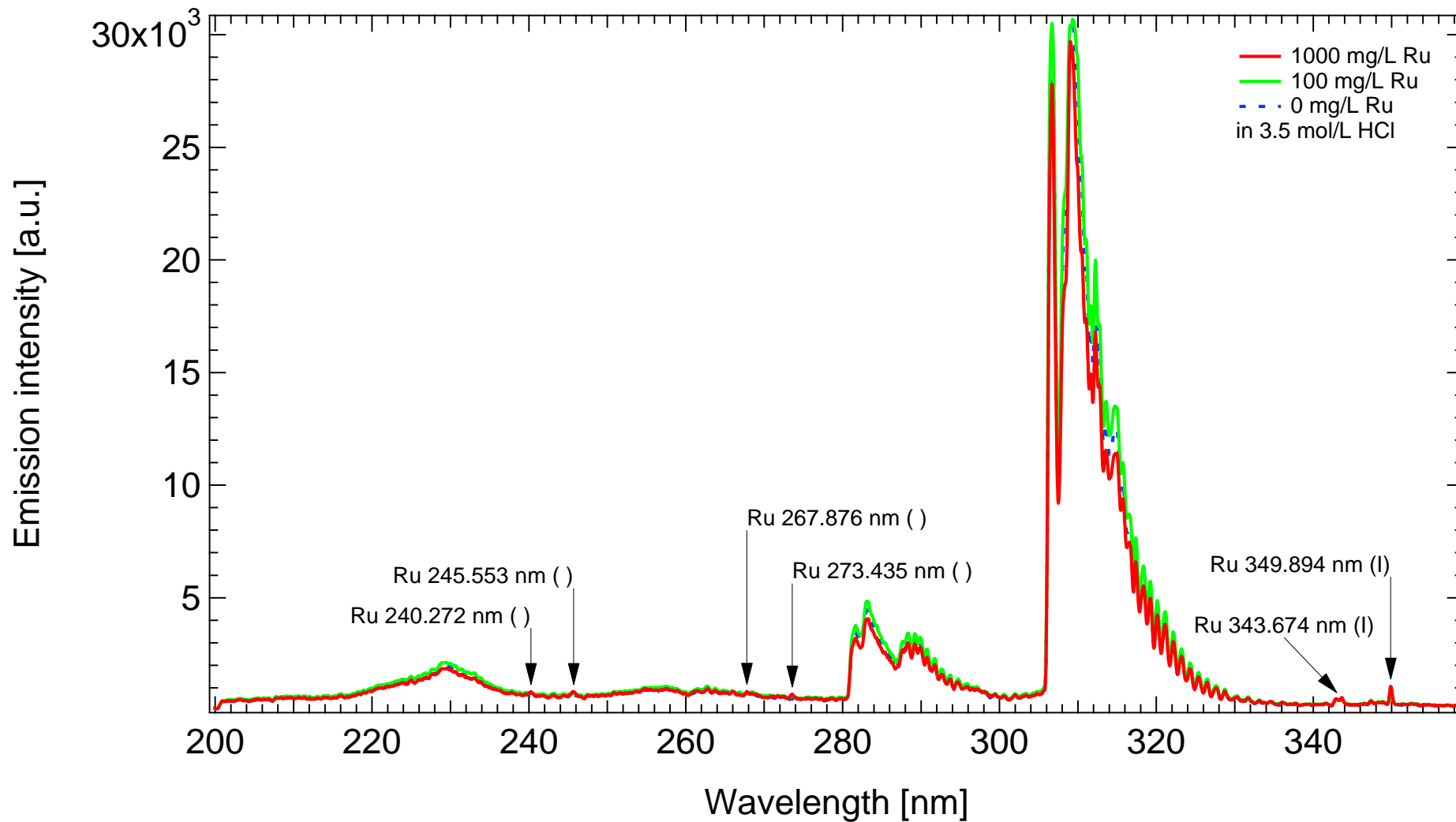


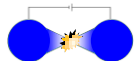
Ru

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 170 ms) × 20 pulses

LepiCuve-C



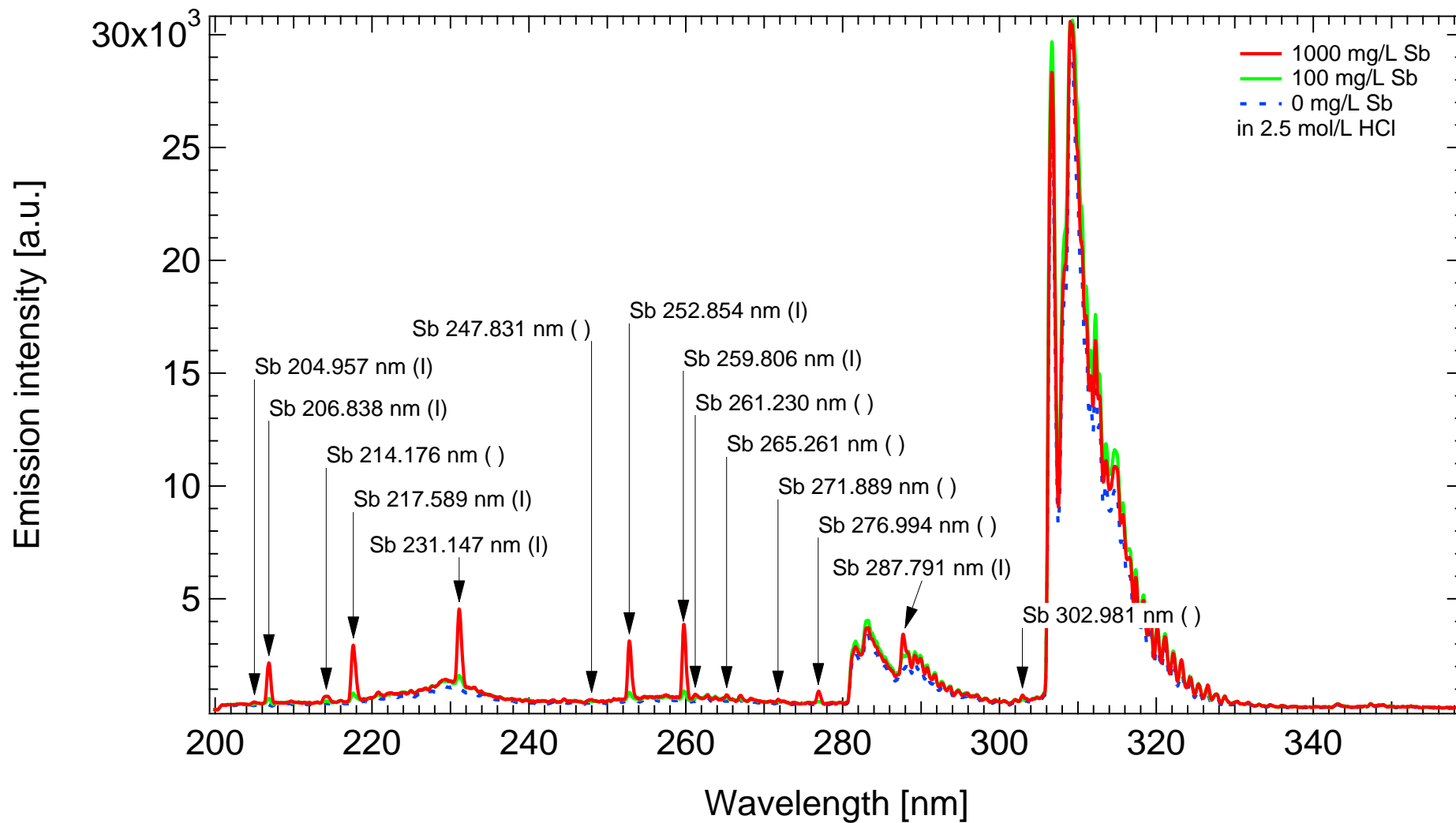


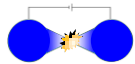
Sb

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 120 ms) × 20 pulses

LepiCuve-C





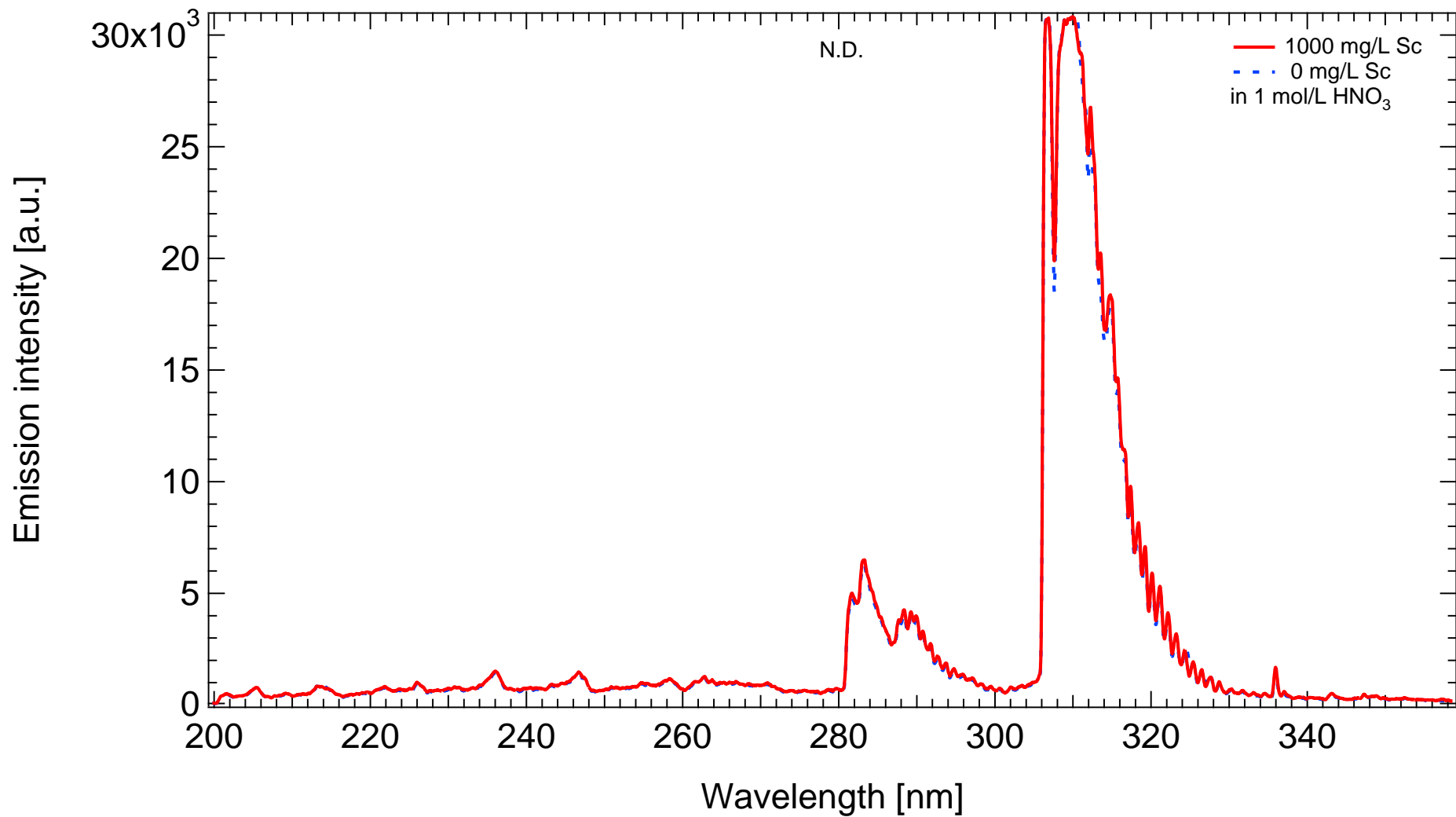
Spectra [T00100E]

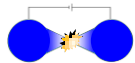
Sc

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 60 ms) × 40 pulses

LepiCuve-C





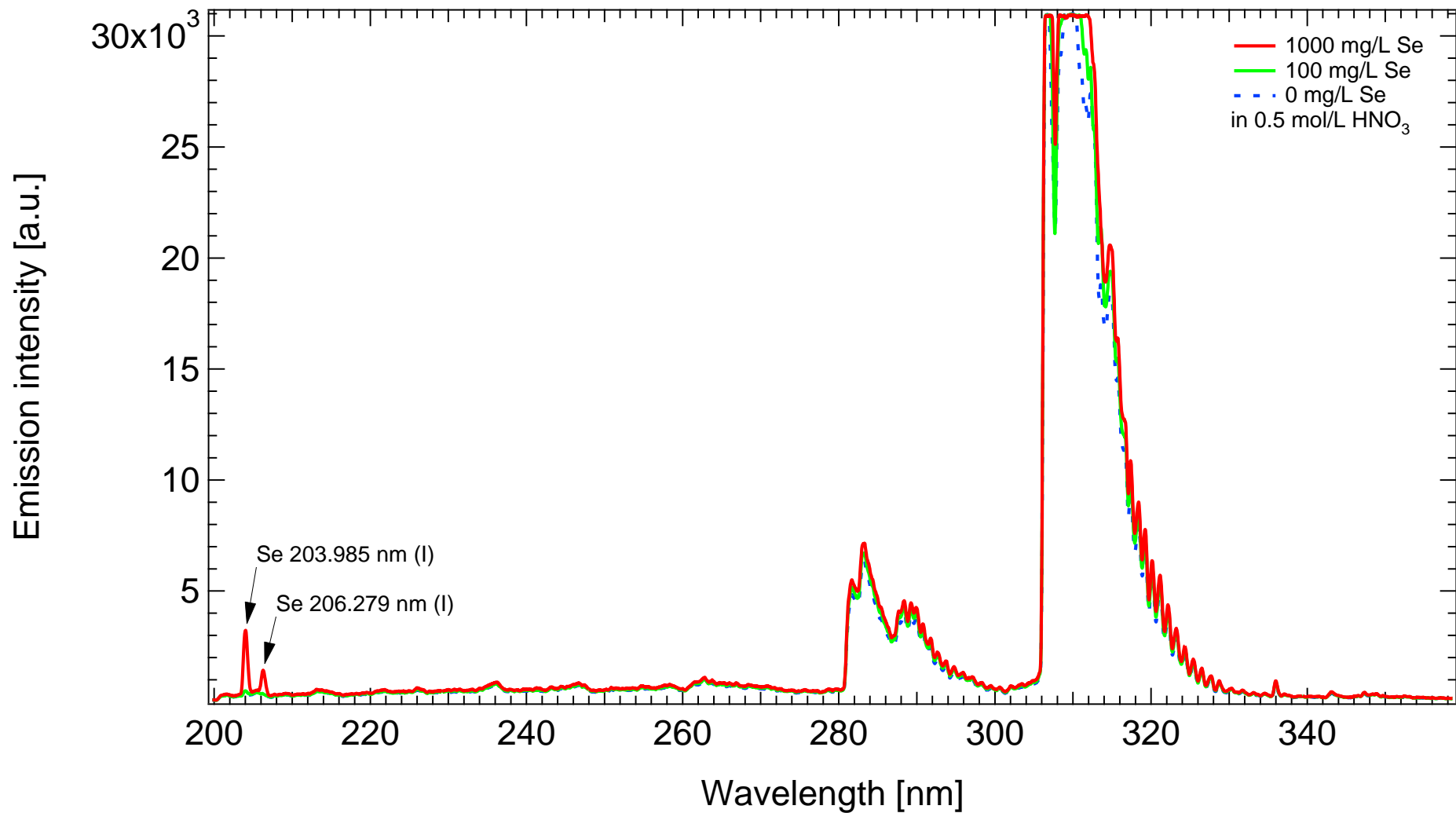
Spectra [T00100E]

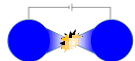
Se

MH-5000 s2035

Conditions: 800 V, (ON: 2 ms / OFF: 50 ms) × 30 pulses

LepiCuve-C



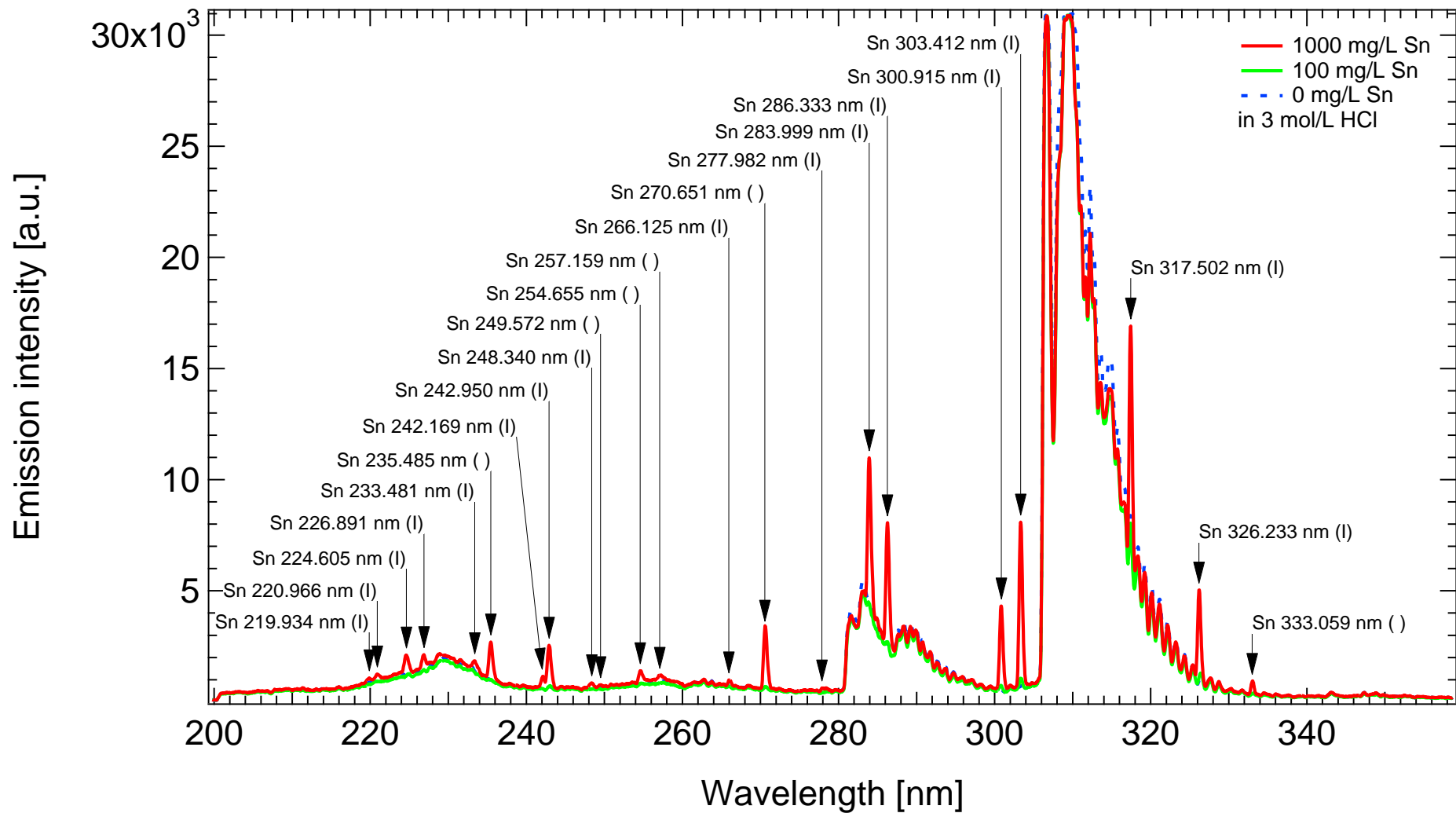


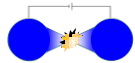
Sn

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 130 ms) × 20 pulses

LepiCuve-C

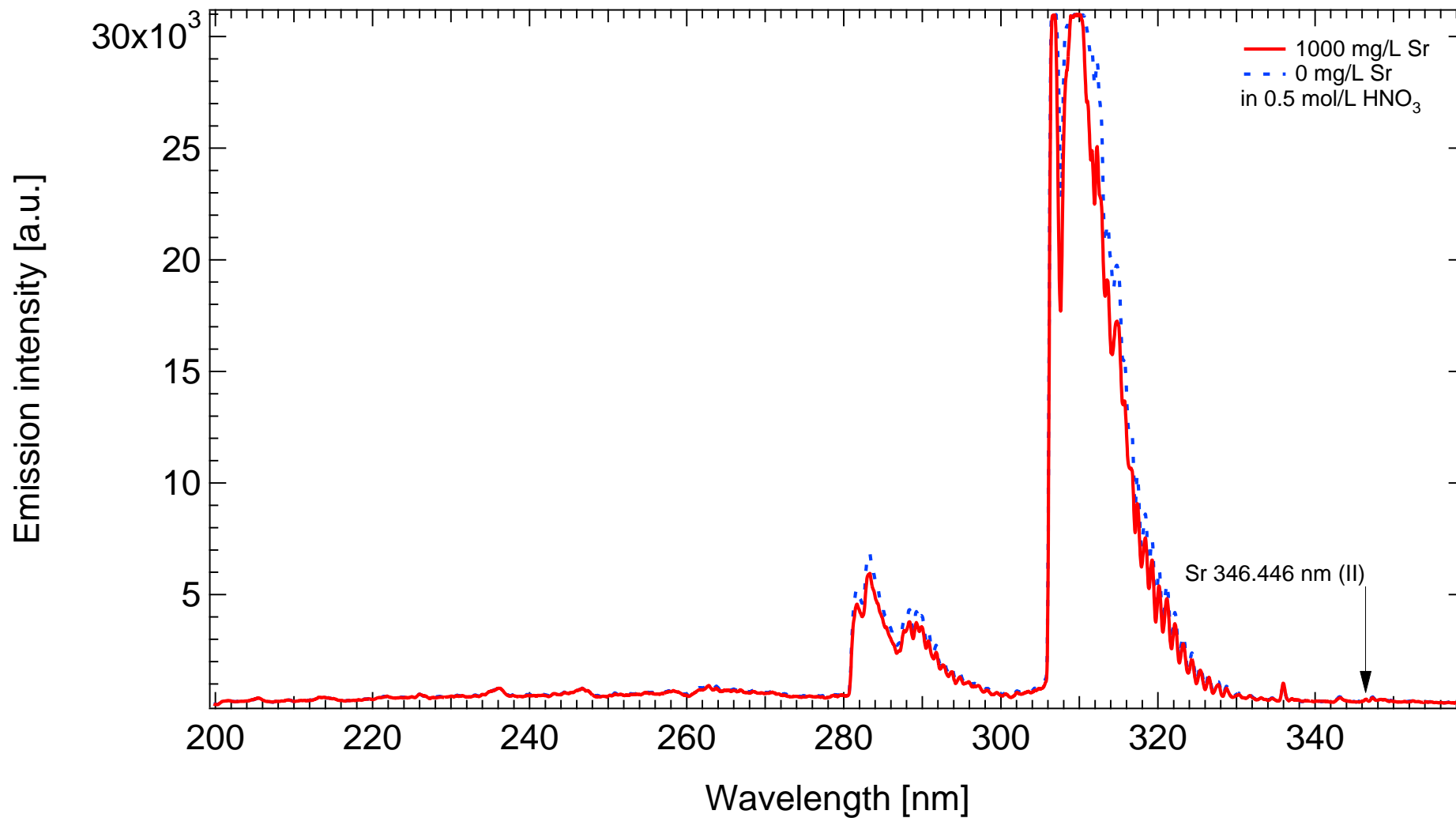


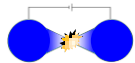


Sr

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 50 ms) × 30 pulses

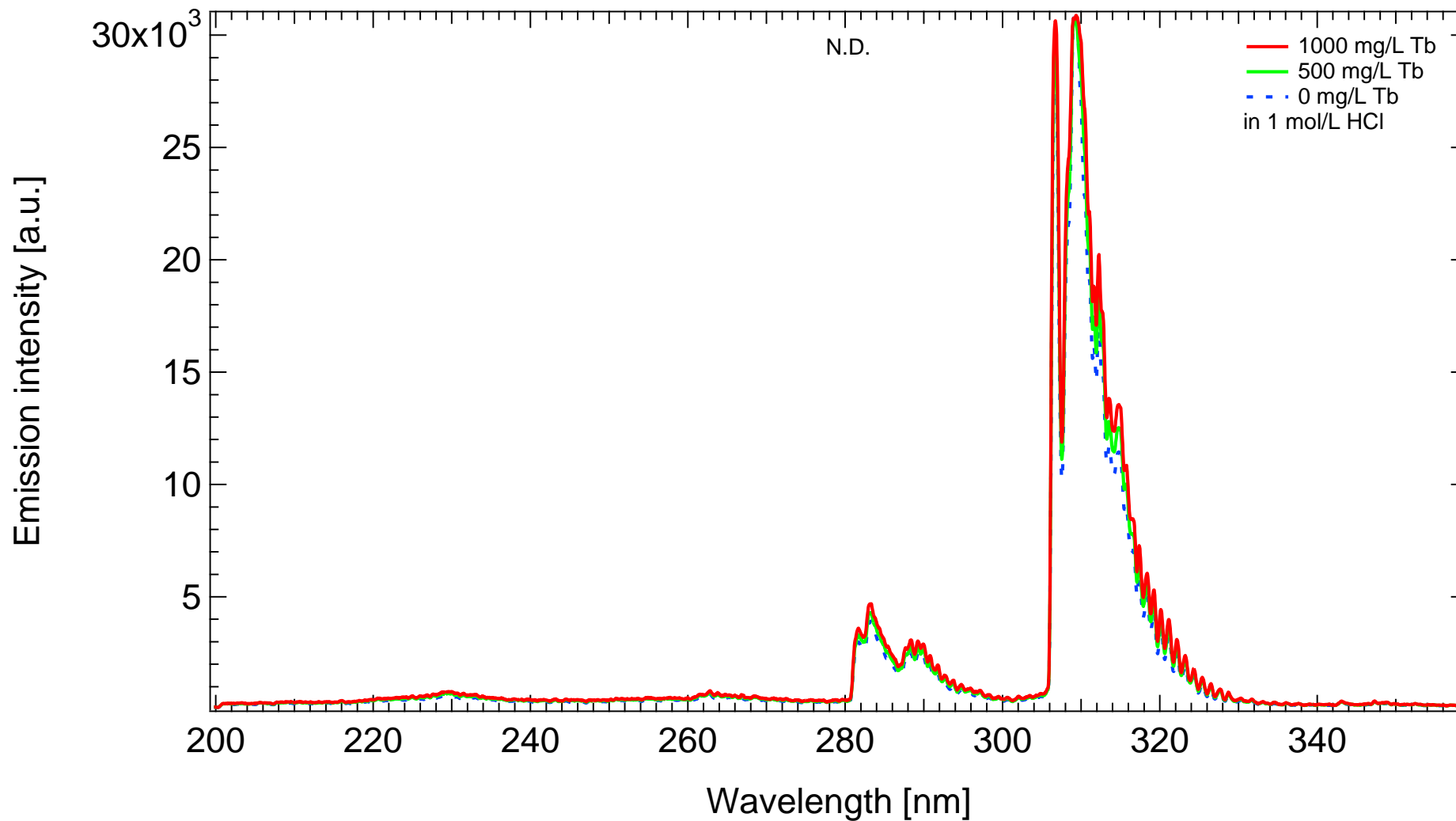


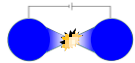


Tb

MH-5000 s2035
LepiCuve-C

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 30 pulses



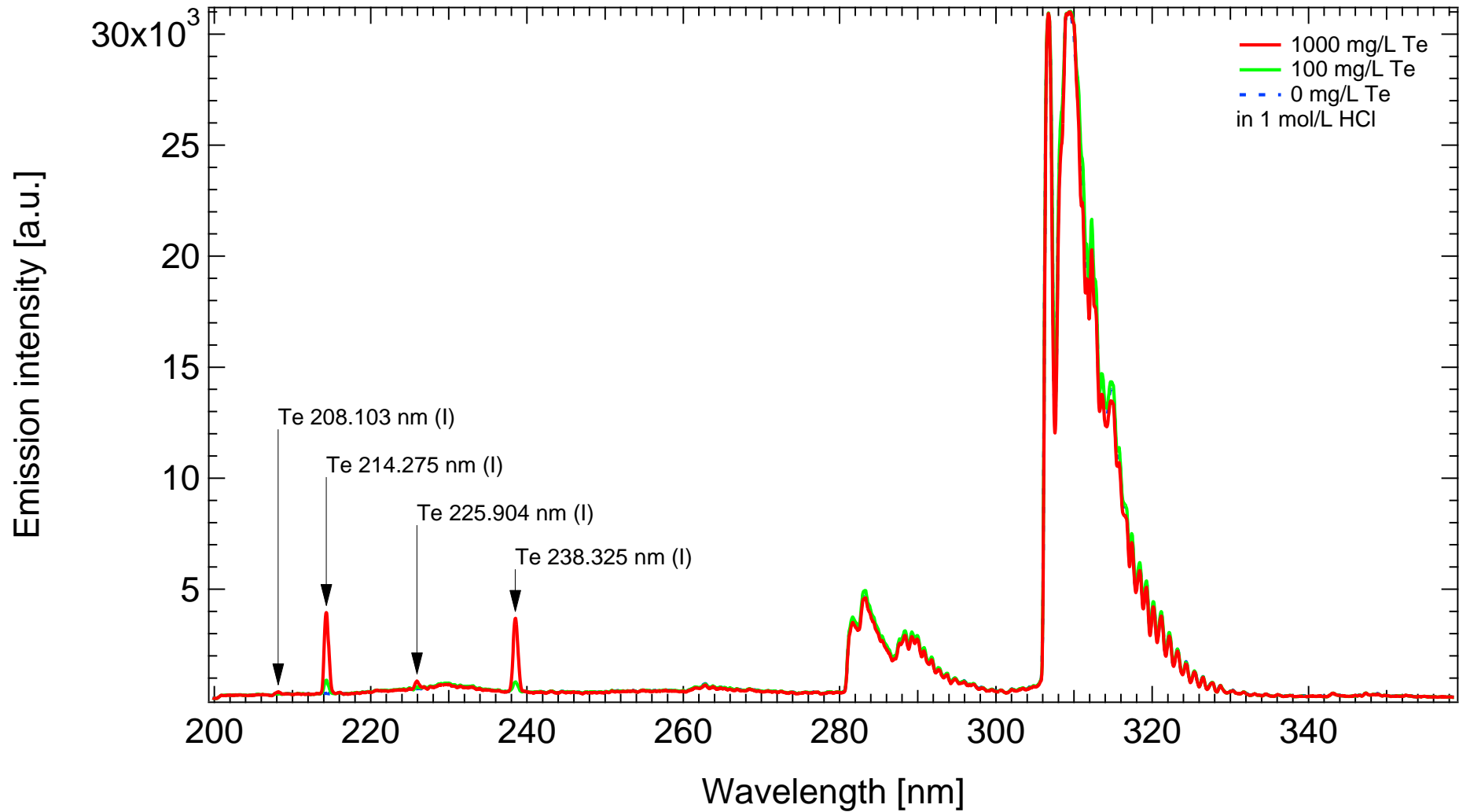


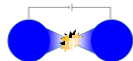
Te

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 30 pulses

LepiCuve-C

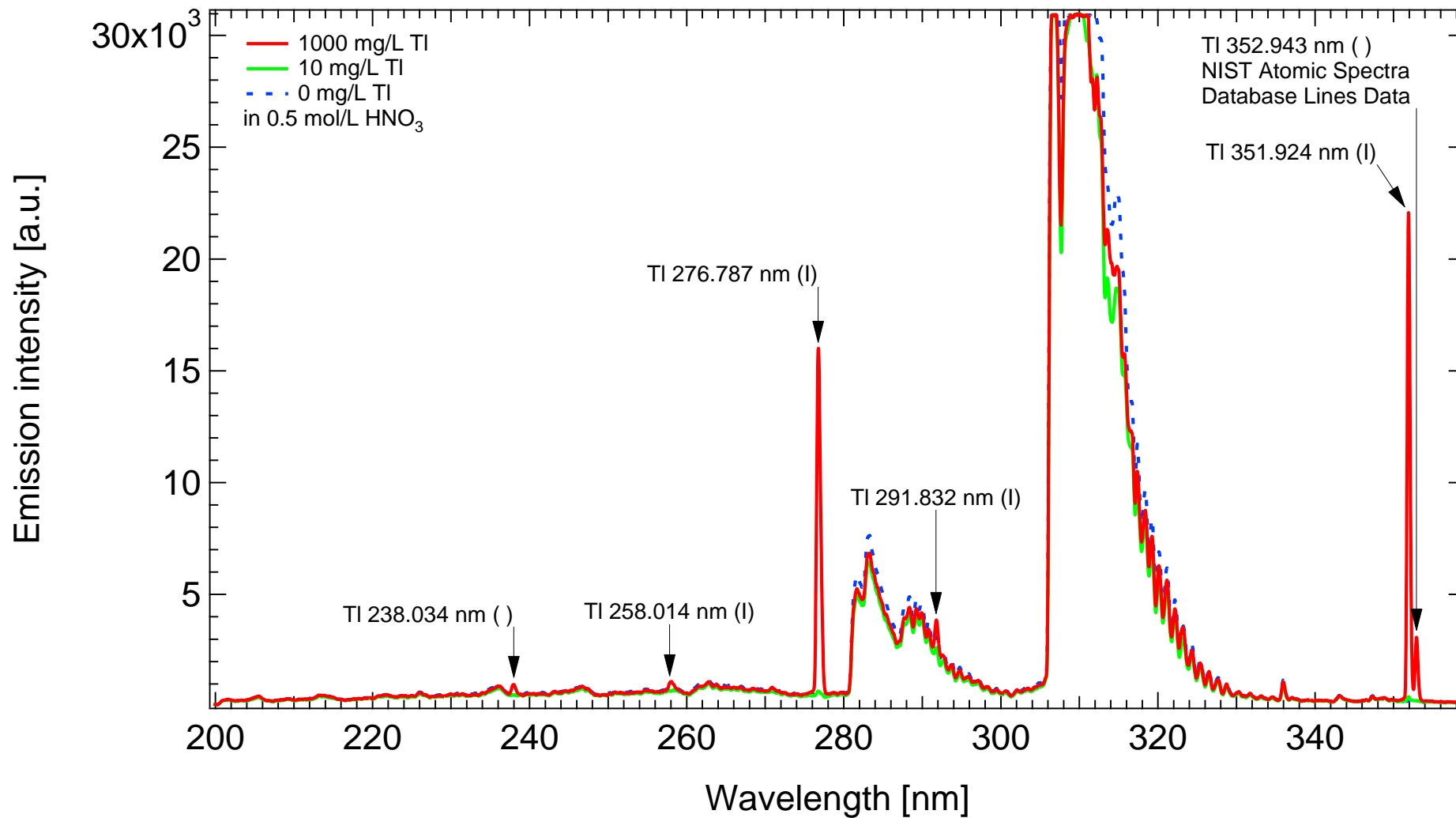


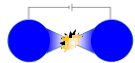


TI

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 50 ms) × 30 pulses





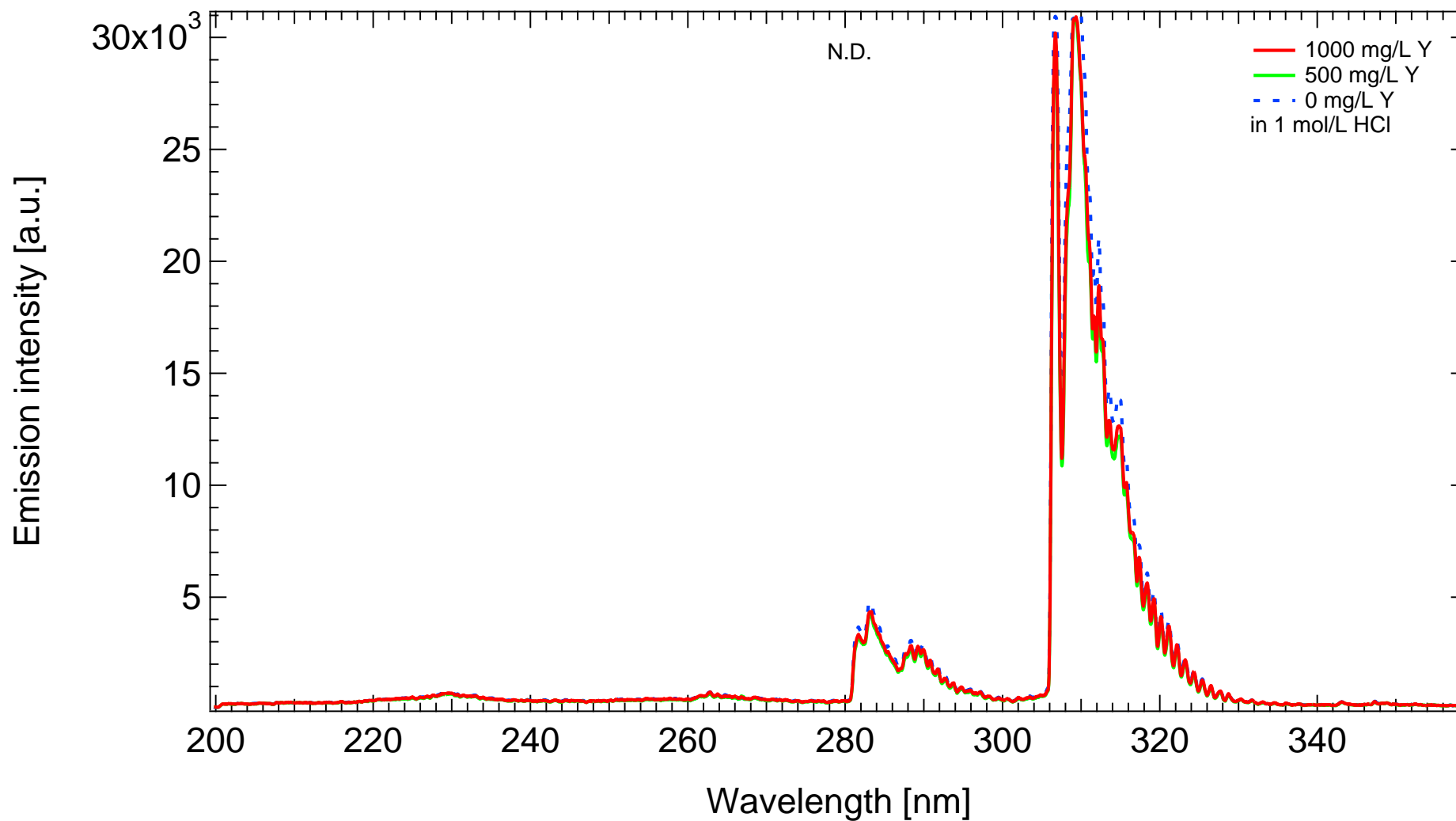
Spectra [T00100E]

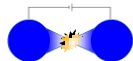
Y

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 30 pulses

LepiCuve-C





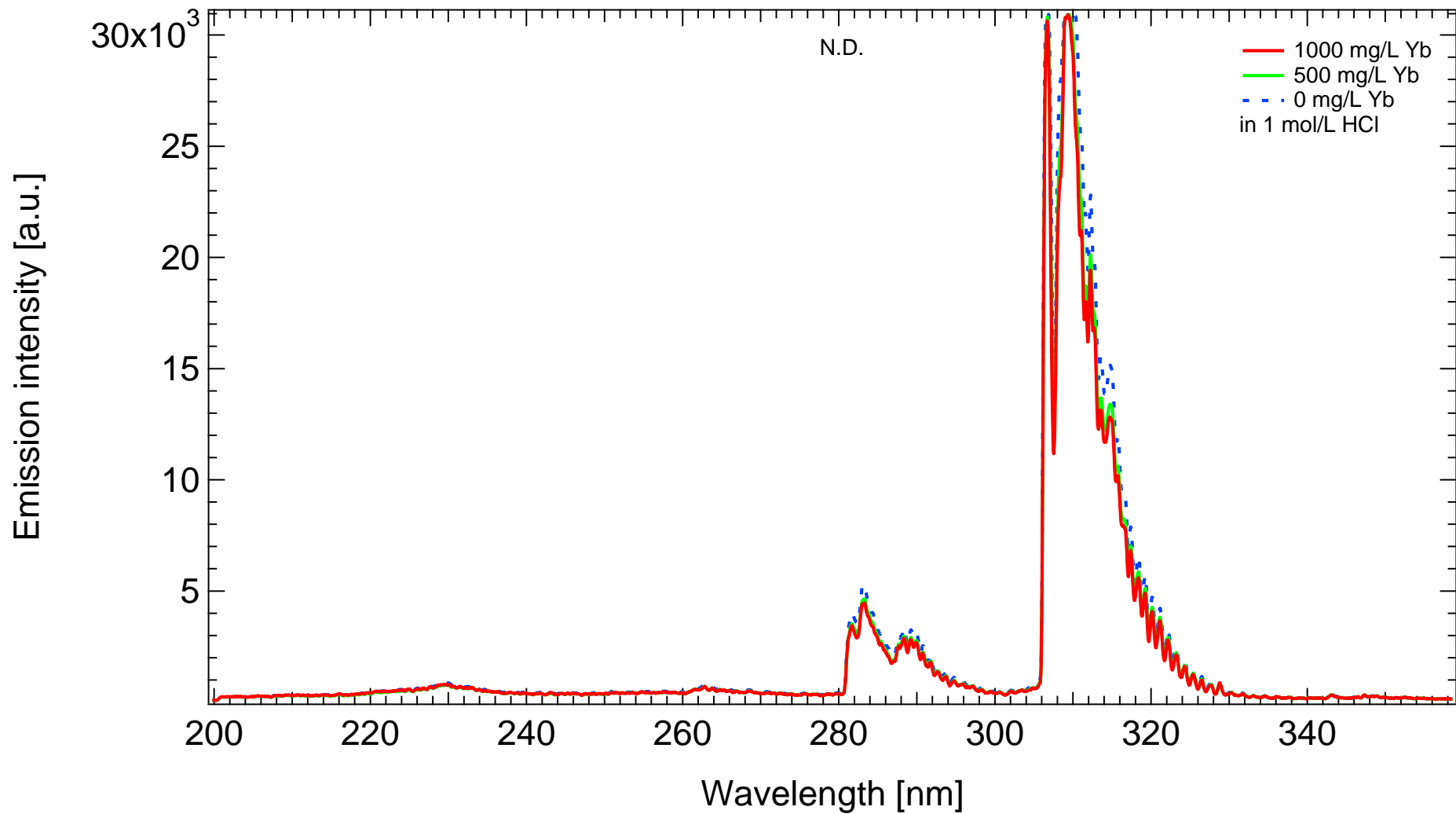
Spectra [T00100E]

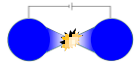
Yb

MH-5000 s2035

Conditions: 700 V, (ON: 2 ms / OFF: 70 ms) × 30 pulses

LepiCuve-C





Zn

MH-5000 s2035
LepiCuve-C

Conditions: 800 V, (ON: 2 ms / OFF: 40 ms) × 40 pulses

